

MEGApix® IVA Intelligent Video Analytics

User Manual

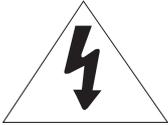
IVA
Inside



User's Manual Ver. 11/20

Before installing and using the camera, please read this manual carefully.
Be sure to keep it handy for future reference.

Safety Information



CAUTION

RISK OF ELECTRIC SHOCK.
DO NOT OPEN.



CAUTION :

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



Warning

This symbol indicates that dangerous voltage consisting of a risk of electric shock is present within this unit.



Precaution

This exclamation point symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING

To prevent damage which may result in fire or electric shock hazard, do not expose this appliance to rain or moisture.

WARNING

1. Be sure to use only the standard adapter that is specified in the specification sheet. Using any other adapter could cause fire, electrical shock, or damage to the product.
2. Incorrectly connecting the power supply or replacing the battery may cause an explosion, fire, electric shock, or damage to the product.
3. Do not connect multiple cameras to a single adapter. Exceeding the capacity may cause excessive heat generation or fire.
4. Securely plug the power cord into the power receptacle. An insecure connection may cause fire.
5. When installing the camera, fasten it securely and firmly. A falling camera may cause personal injury.
6. Do not place conductive objects (e.g. screwdrivers, coins, metal items, etc.) or containers filled with water on top of the camera. Doing so may cause personal injury due to fire, electric shock, or falling objects.
7. Do not install the unit in humid, dusty, or sooty locations. Doing so may cause fire or electric shock.
8. If any unusual smells or smoke come from the unit, stop using the product. Immediately disconnect the power source and contact the service center. Continued use in such a condition may cause fire or electric shock.
9. If this product fails to operate normally, contact the nearest service center. Never disassemble or modify this product in any way.
10. When cleaning, do not spray water directly onto parts of the product. Doing so may cause fire or electric shock.

Precaution

Operating

- Before using, make sure the power supply and all other parts are properly connected.
- While operating, if any abnormal condition or malfunction is observed, stop using the camera immediately and contact your dealer.

Handling

- Do not disassemble or tamper with parts inside the camera.
- Do not drop the camera or subject it to shock or vibration as this can damage the camera.
- Clean the clear dome cover with extra care. Scratches and dust can ruin the quality of the camera image.

Installation and Storage

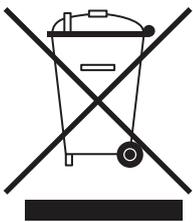
- Do not install the camera in areas of extreme temperature, exceeding the allowed range.
- Avoid installing in humid or dusty environments.
- Avoid installing in places where radiation is present.
- Avoid installing in places where there are strong magnetic fields and electric signals.
- Avoid installing in places where the camera would be subject to strong vibrations.
- Never expose the camera to rain or water.

Important Safety Instructions

1. **Read these Instructions.** - All these safety and operating instructions should be read before the product is installed or operated.
2. **Keep these Instructions.** - The safety, operating and use instructions should be retained for future reference.
3. **Heed all warnings.** - All warnings on the product and in the operating instructions should be adhered to.
4. **Follow all instructions.** - All operating and use instructions should be followed.
5. **Do not use this device near water.** - For example: near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement; near a swimming pool; etc.
6. **Clean only with a dry cloth.** - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners.
7. **Do not block any ventilation openings. Install following the manufacturer's instructions.** - Slots and openings in the cabinet are provided for ventilation, to ensure reliable operation of the product, and to protect it from overheating. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surfaces. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and the manufacturer's instructions have been adhered to.
8. **Do not install near any heat sources such as radiators, heat registers, or other apparatus (including amplifiers) that produce heat.**
9. **Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.**
10. **Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.**
11. **Only use attachments/accessories specified by the manufacturer.**
12. **Use only with cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.**
13. **Unplug this apparatus during lightning storms or when unused for long periods.**
14. **Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.**



Disposal of Old Appliances



1. When this crossed-out wheel bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.
2. All electrical and electronic products should be disposed of separately from the municipal waste stream per laws designated by the government or the local authorities.
3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.



This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Table of Contents

Introduction	4
Rules	5
Intrusion	7
Line Crossing	8
Enter	9
Exit	10
Appear	11
Disappear	12
Stopped	13
Loitering	14
Direction	15
Object Removed	16
Abandoned	17
Tailgating	18
Counting Line	19
Logical Rules	21
Non-Detect Zone	23
Counters	24
Calibration	26
Classification	27
Burnt-In Annotation	28
TCP Notifications	29
HTTP Notifications	30
Tamper	31
Advanced	32
Tokens	33
Appendix.....	34
IVA Edge Plug-in	34
License Purchasing	36
License Activation on the Camera	38
Camera Installation Guide	40
Warranty.....	43
Limits and Exclusions.....	44

IVA - Introduction

IVA is a real-time video analytics engine that utilizes advanced image processing algorithms to turn video into actionable intelligence. At the core of the product is an advanced object tracking engine that continually tracks moving and stationary targets. The tracking engine features built-in robustness to environmental nuisance conditions such as changing illumination, moving foliage, rippling water, etc.

The IVA rules are available at two levels as follows:

- **IVA:** IVA license comes pre-loaded on all supporting DW IP cameras. DW customers who have the supporting IP cameras are eligible for an upgrade to IVA firmware at no additional cost.
- **IVA+:** IVA+ cameras come pre-loaded with IVA+ licensing. DW customers with IVA cameras can also purchase the IVA+ licensing via their myDW account and upgrade their existing IVA cameras to include the IVA+ rules and functions.



IVA AND IVA+ LICENCE MATRIX

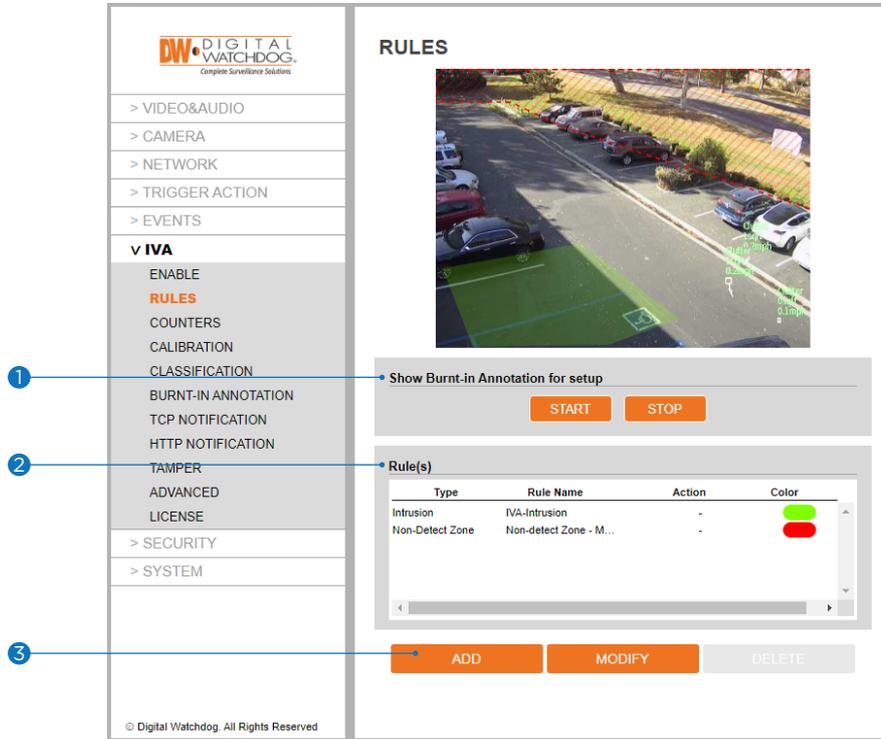
License Type	MEGApix IVA	MEGApix IVA+
Max Number of Detection Zones	40	40
Intrusion	√	√
Line Crossing	√	√
Counting Line	√	√
Loitering	√	√
Enter/Exit	√	√
Tamper	√	√
Object Removed		√
Tailgating		√
Direction		√
Stopped		√
Appear/Disappear		√
Object Left		√
Logical Rules		√

- ⊠ **Note:** To export metadata related to trigger events, use tokens. Event triggers replace the tokens' information at the time of the trigger.

IVA - Rules

Rules are used to react to events within a scene and trigger actions. To manage the rules active on the camera, open the camera's "SETUP" and go to IVA > RULES.

⚠ **Note:** Chrome browser is recommended for IVA configuration.



The rules feature displays a live view from the camera and allow you to add, modify or delete rules.

1 **Show Burnt-in Annotation for setup:** Enable or disable the active rules display on the camera's preview screen. This is for the setup only. To enable the burnt-in annotation on the camera's live and recorded view, go to IVA> Burnt-In Annotation on the left navigation bar.

⚠ **Note:** Burnt-in annotation to be enabled on the left navigation bar to be enabled here.

2 **Rules:** The table shows the current rules that have been set up for the camera.

3 **Add, Modify, Delete:** When selected, the drop-down menu will display all available rules to add to the camera. The list may vary depending on the IVA and IVA+ license installed on the camera.

How to Add a Rule:

- 1 Click on 'Add' to display the available rules in the drop-down window and select a rule to add.
- 2 Adjust the rule settings accordingly.
- 3 Click on 'Save' to save the rule.

How to Modify a Rule:

- 1 Select a rule from the table.
- 2 Click on 'Modify' to open the settings for the rule and modify them accordingly.
- 3 Click on 'Save' to save the rule.

How to Delete a Rule:

- 1 Select a rule from the table.
- 2 Click on 'Delete' to delete the rule from the list.

⚠ **Note:** Rules cannot be deleted if they are linked to an action or counter. Remove any links before deleting a rule.

IVA - Rules and Definitions

The type of rules available include:

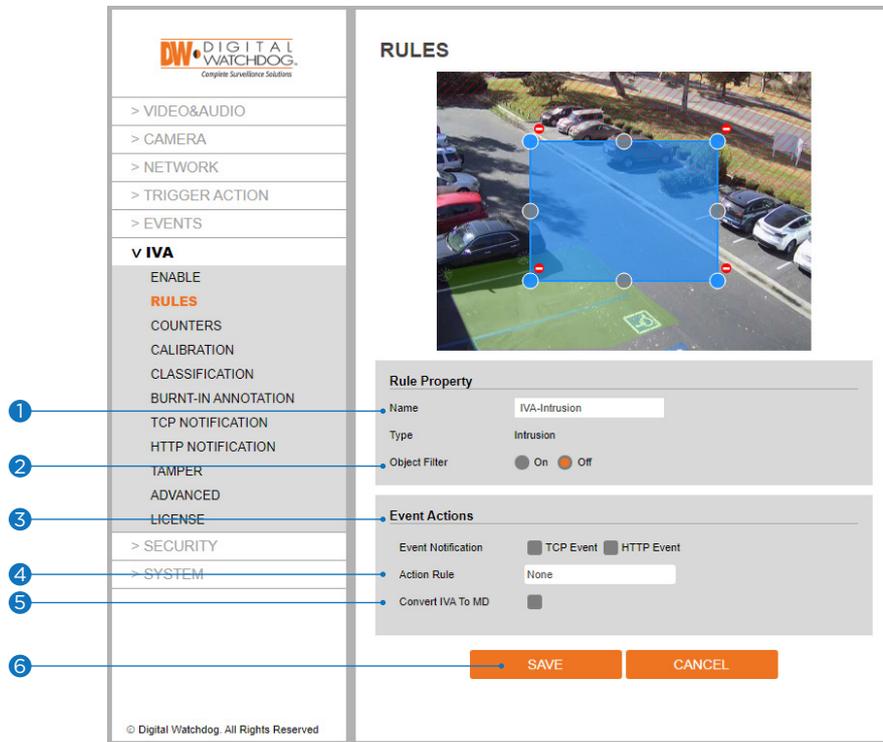
- **Intrusion:** When people or objects are first detected inside the detection zone, they trigger an alarm. The people or objects keep being tracked while they are in the detection zone.
- **Line Crossing:** When people or objects cross the detection line in any direction, they trigger an alarm. The people or objects are tracked only once when they cross the detection line.
- **Enter:** The alarm is triggered when people or objects overlap with the detection zone's border.
- **Exit:** The alarm is triggered when people or objects leave the detection zone.
- **Appear:** When people or objects start being tracked by the camera inside the detection zone, an alarm will be triggered. The rule detects people or objects that start being tracked from within the detection zone.
- **Disappear:** When people or objects stop being tracked by the camera inside the detection zone, an alarm will be triggered. The rule detects people or objects that stop being tracked from within the detection zone.
- **Stopped:** When people or objects cross into a detection zone and remain there past the set dwell time, an alarm will be triggered. The people or objects must remain stopped. For alarm triggers when an object remains moving in the zone, use the loitering rule.
- **Loitering:** When people or objects cross into a detection zone and remain there past the set dwell time, an alarm will be triggered. The people or objects must remain moving. For alarm triggers when an object remains stopped in the zone, use the Stopped rule.
- **Direction:** When people or objects cross the direct line from the set direction and angle, they will trigger an alarm.
- **Removed:** When an object being tracked is missing from the detection zone, it will trigger an alarm.
- **Abandoned:** When an object being tracked is left in the detection zone, it will trigger an alarm.
- **Tailgating:** Detect a person or object crossing the detection line within a set period from the previous people or objects that have passed through the detection zone.
- **Counting Line:** When a person or object crosses the detection line in the set "forward" direction, the count adds 1. When a person or object oppositely crosses the detection line, the count decreases by 1. The counting can be added as a text overlay on the camera's view.
- **Logical Rules:** The logical rules option allows rules to be combined to form a complex filter for events to check against, which can help to reduce false alerts.
- **Non-Detect Zone:** The non-detect zone option can be used to exclude areas of the scene from being processed through the analytics engine. This can be used to reduce false triggers that can be caused by moving foliage or busy scenes.
- **Camera Tampering:** An alarm is triggered when the camera detects bagging, defocusing, and general movement of the camera. (Please note the camera tampering setup is completed under IVA> TAMPER).

IVA - Rules - Intrusion

Intrusion

The Intrusion rule triggers an event when an object is first detected in the detection zone.

⚠ **Note:** The Intrusion rule will trigger in the same circumstances as the Enter and Appear rules. The choice of which rule is most appropriate will depend on the scenario and the camera's FOV.



The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 **Name:** Name the rule.
- 2 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
 - ⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 3 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - ⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 **Action Rule:** Select to send an image of the camera's view to an FTP/SFTP server when an event occurs.
 - ⚠ **Note:** FTP and/or SFTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 6 Click 'Save' to save all settings.
 - ⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Line Crossing

Line Crossing

The line crossing rule triggers an event when an object is first detected crossing the rule line.

⚠ **Note:** The line crossing rule will activate in the same circumstances as the direction and counting line rules. The choice of which rule is most appropriate will depend on the scenario and the camera's FOV.

The rule will create a line and overlay it on the live view.

The line's orientation and length can be reshaped by selecting the color nodes at the edge of the lines.

Click on a gray node to split the segment and create a more complex shape.

To remove a segment, select the minus red sign next to a node.

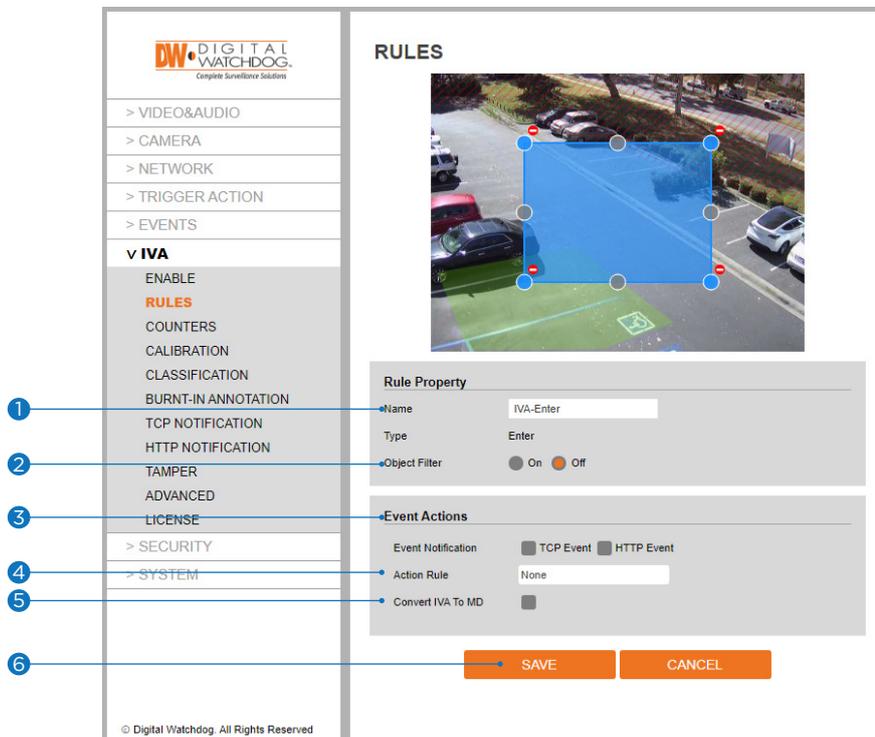
- 1 **Name:** Name the rule.
- 2 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
 - ⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 3 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - ⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
 - ⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 6 Click 'Save' to save all settings.
 - ⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Enter

Enter

The enter rule triggers an event when an object crosses from outside a zone to inside a zone.

⚠ **Note:** The enter rule detects already-tracked objects crossing the zone border from outside to inside.



The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

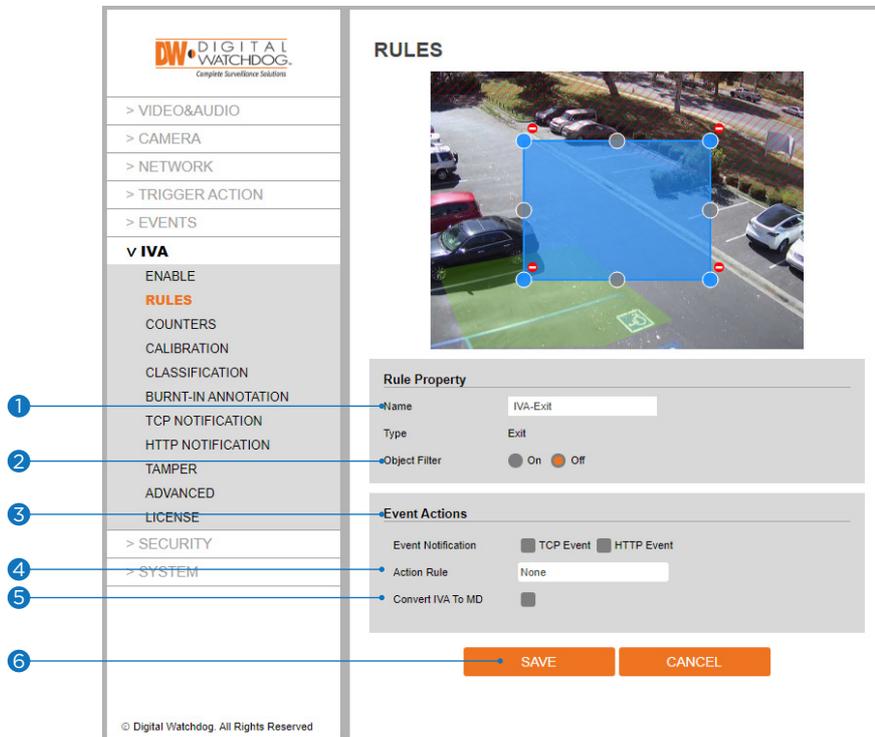
- 1 **Name:** Name the rule.
- 2 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 3 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 6 Click 'Save' to save all settings.
⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Exit

Exit

The exit rule triggers an event when an object crosses from inside a zone to outside a zone.

⚠ **Note:** The exit rule detects already-tracked objects crossing the zone border from inside to outside.



The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 **Name:** Name the rule.
- 2 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 3 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 6 Click 'Save' to save all settings.
⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Appear

Appear

The appear rule triggers an event when an object starts to be tracked from within a zone.

⚠ **Note:** The appear rule detects objects that start being tracked from within a zone.

1 Name

2 Object Filter

3 Event Actions

4 Action Rule

5 Convert IVA To MD

6 SAVE

The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 **Name:** Name the rule.
- 2 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 3 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 **Action Rule:** Select to send an image of the camera's view to an FTP/SFTP server when an event occurs.
⚠ **Note:** FTP and/or SFTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 6 Click 'Save' to save all settings.
⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Disappear

Disappear

The disappear rule triggers an event when an object stops being tracked from within a zone.

🔗 **Note:** The disappear rule detects objects that stop being tracked from within a zone.

The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 **Name:** Name the rule.
- 2 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
🔗 **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 3 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.🔗 **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
🔗 **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 6 Click 'Save' to save all settings.
🔗 Click 'Cancel' to return to the previous setting.

IVA - Rules - Stopped

Stopped

The stopped rule detects objects stationary inside a detection zone for longer than the specified threshold.

⚠ **Note:** The stopped rule does not detect abandoned objects. It detects objects which were moving and then become stationary.

The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

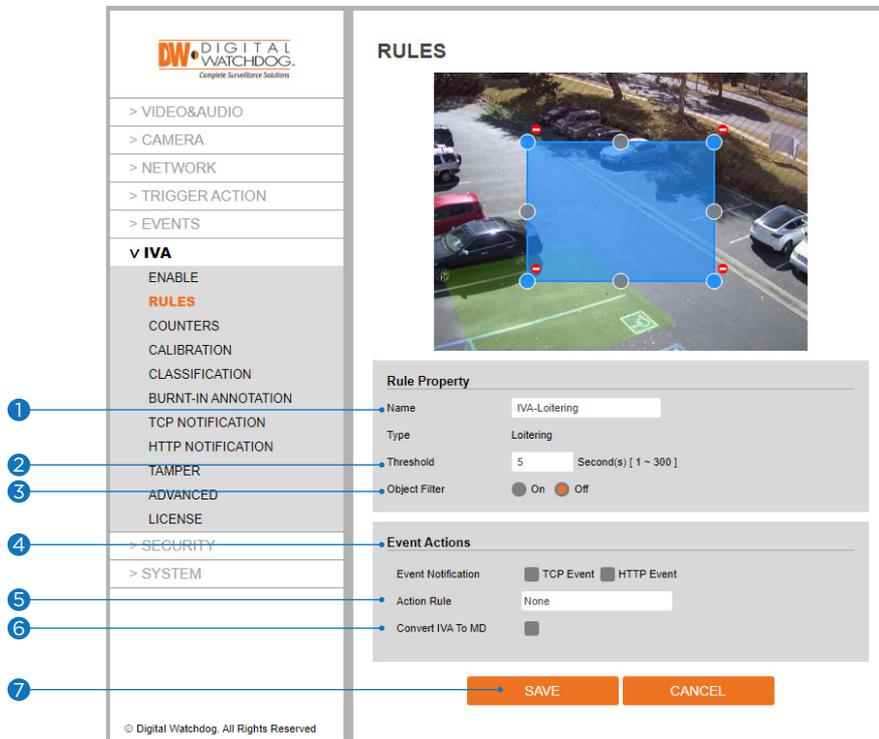
Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 **Name:** Name the rule.
- 2 **Threshold:** Define, in seconds, the time an object must be stopped before triggering an event.
- 3 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 4 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - ⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 5 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 6 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 7 Click 'Save' to save all settings.
⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Loitering

Loitering

The Loitering rule triggers an event when a person is present in a detection zone for a set threshold.



The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

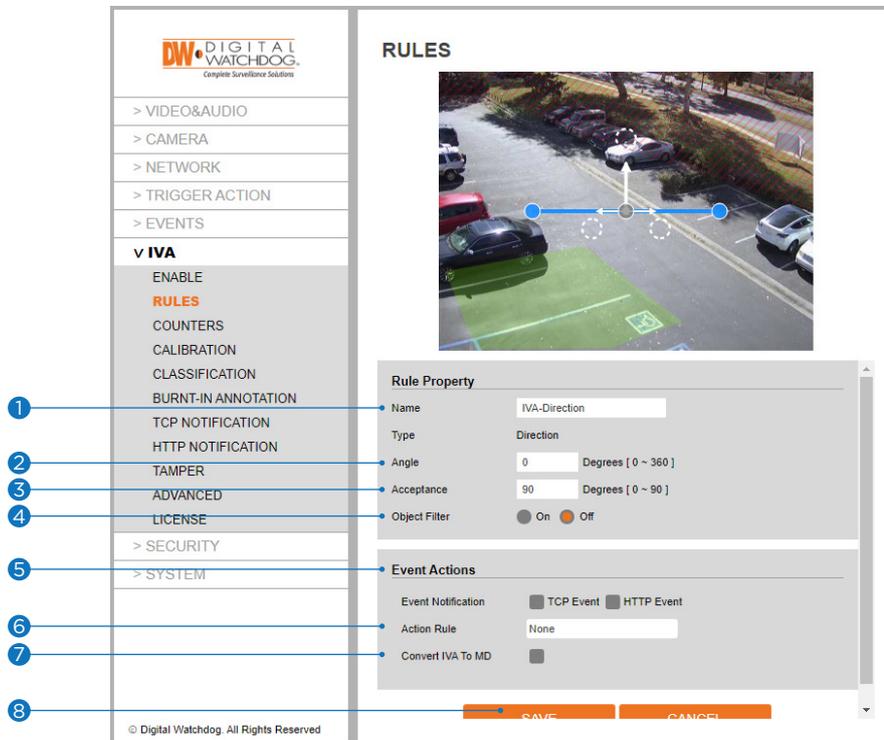
Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 Name:** Name the rule.
- 2 Threshold:** Define, in seconds, the time an object must be stopped before triggering an event.
- 3 Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
 - ⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 4 Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - ⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 5 Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
 - ⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 6 Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 7** Click 'Save' to save all settings.
 - ⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Direction

Direction

The direction rule triggers an event when an object crosses the detection line in a particular direction and within the acceptable parameters.



The rule will create a line and overlay it on the live view.

The line's orientation and length can be reshaped by selecting the color nodes at the edge of the lines.

Click on a gray node to split the segment and create a more complex shape.

To remove a segment, select the minus red sign next to a node.

- 1 **Name:** Define the name of the rule.
- 2 **Angle:** Define the direction the objects move to trigger an event.
- 3 **Acceptance:** Define the allowed variance on the direction side that will still trigger an event.
- 4 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
 - ⚙️ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 5 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - ⚙️ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 6 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
 - ⚙️ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 7 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 8 Click 'Save' to save all settings.
 - ⚙️ Click 'Cancel' to return to the previous setting.

IVA - Rules - Object Removed

Removed

The removed rule triggers an event when the area within the detection zone changes for a set time. The removed rule works similar to the abandoned rule. The scene is monitored for changes and measured against the set conditions to trigger an event.

The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

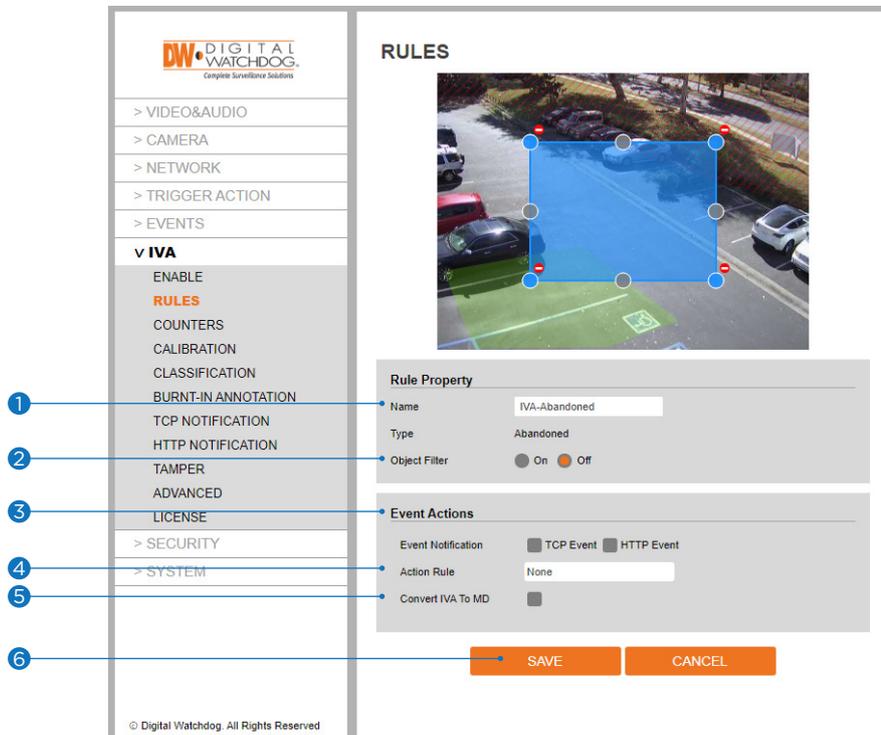
Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 Name:** Name the rule.
- 2 Object Filter:** Not available for this rule.
- 3 Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
 - Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- Click 'Save' to save all settings.
 - Click 'Cancel' to return to the previous setting.

IVA - Rules - Abandoned

Abandoned

The abandoned rule triggers an event when an object is left in the detection zone for the set time. The abandoned rule works similar to the removed rule. The scene is monitored for changes and measured against the set conditions to trigger an event.



The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

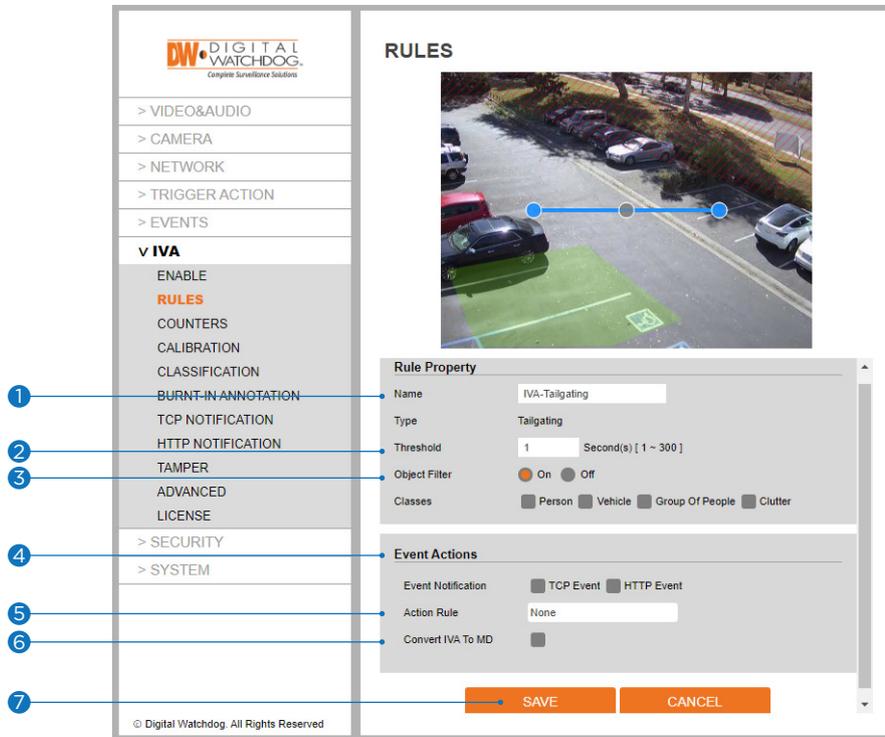
Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

- 1 Name:** Name the rule.
- 2 Object Filter:** Not available for this rule.
- 3 Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 4 Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
 - Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 5 Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 6** Click 'Save' to save all settings.
 - Note:** Click 'Cancel' to return to the previous setting.

IVA - Rules - Tailgating

Tailgating

The tailgating rule triggers an event when objects cross a detection line within quick succession of each other in a set time.



The rule will create a line and overlay it on the live view.

The line's orientation and length can be reshaped by selecting the color nodes at the edge of the lines.

Click on a gray node to split the segment and create a more complex shape.

To remove a segment, select the minus red sign next to a node.

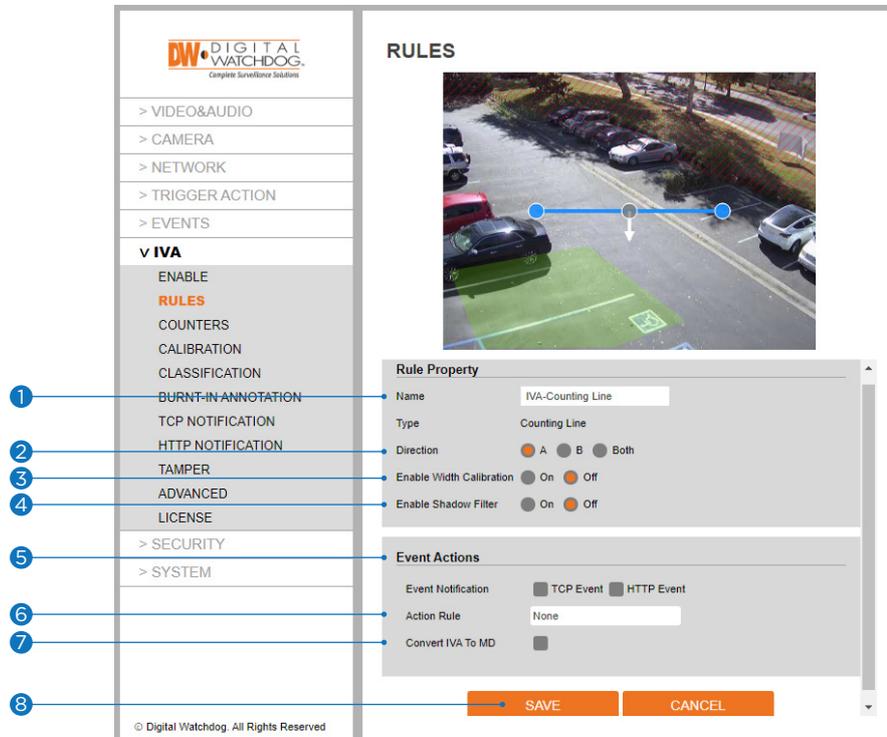
- 1 **Name:** Name the rule.
- 2 **Threshold:** Define, in seconds, the maximum time between the first and second objects crossing the detection line before triggering an event.
- 3 **Object Filter:** Allow the rule to trigger based on the classification of an object (e.g. person, vehicle). Any combination of the available options is possible.
 - ⚠ **Note:** Complete the camera calibration under IVA>CLASSIFICATION to define the different classes available.
- 4 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - ⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 5 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
 - ⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 6 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 7 Click 'Save' to save all settings.
 - ⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Counting Line

Counting Line

The counting line rule triggers an event when an object crosses the line in the direction indicated.

- ⚠ **Note:** The counting line differs from the direction rule. Each segment of the line can have a different direction defined.



The rule will create a line and overlay it on the live view.

The line's orientation and length can be reshaped by selecting the color nodes at the edge of the lines.

Click on a gray node to split the segment and create a more complex shape.

To remove a segment, select the minus red sign next to a node.

- ⚠ **Note:** The Counting Line rule is best used in combination with the Counters feature to keep a tally of objects/people that pass the line.

The direction indicator shows the direction objects must take to trigger an event. Different segments in the detection line can be configured to point in any direction required.

- 1 **Name:** Name the rule.
- 2 **Direction:** Define the direction that will be monitored.
 - A: Define the direction monitored.
 - B: Define the opposite direction from A to be monitored.
 - Both: Both directions across the counting line are monitored.
- 3 **Enable Width Calibration:** If enabled, define the width value for the counting line to count an object.
- 4 **Enable Shadow Filter:** If enabled, the camera can analyze the image to prevent counting shadows.

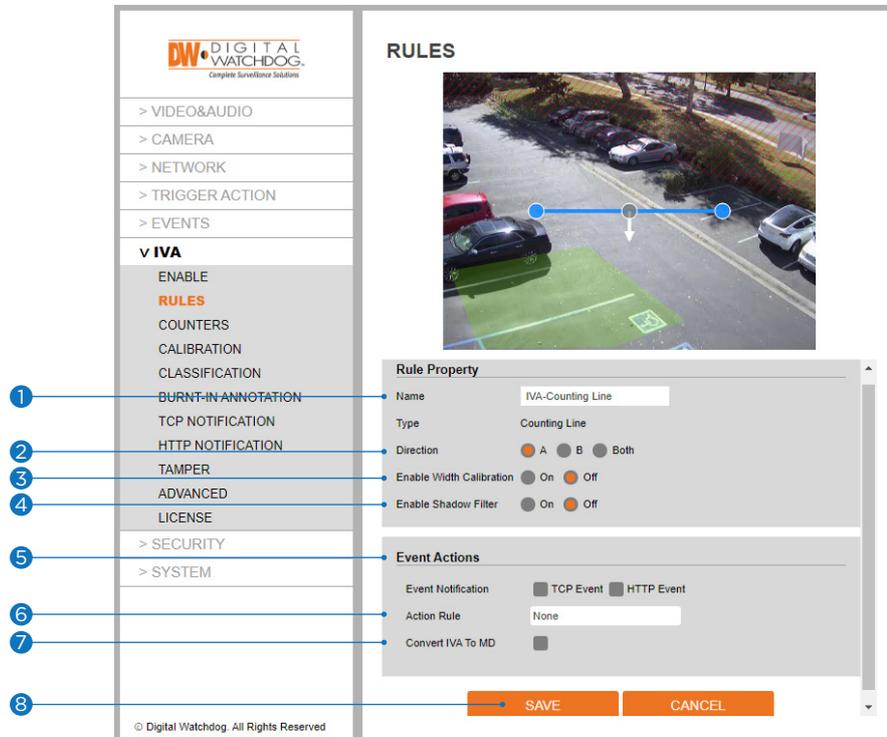
- ⚠ **Note:** To add a text overlay on the video with the current count, go to IVA>COUNTERS to set up the text, position, and input to be added.

IVA - Rules - Counting Line (Cont.)

Counting Line

The counting line rule triggers an event when an object crosses the line in the direction indicated.

- ⚠ **Note:** The counting line differs from the direction rule. Each segment of the line can have a different direction defined.



5 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.

- TCP Event: Enable/disable TCP notification when an event occurs.
- HTTP Event: Enable/disable HTTP notification when an event occurs.

⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.

6 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.

- ⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.

7 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.

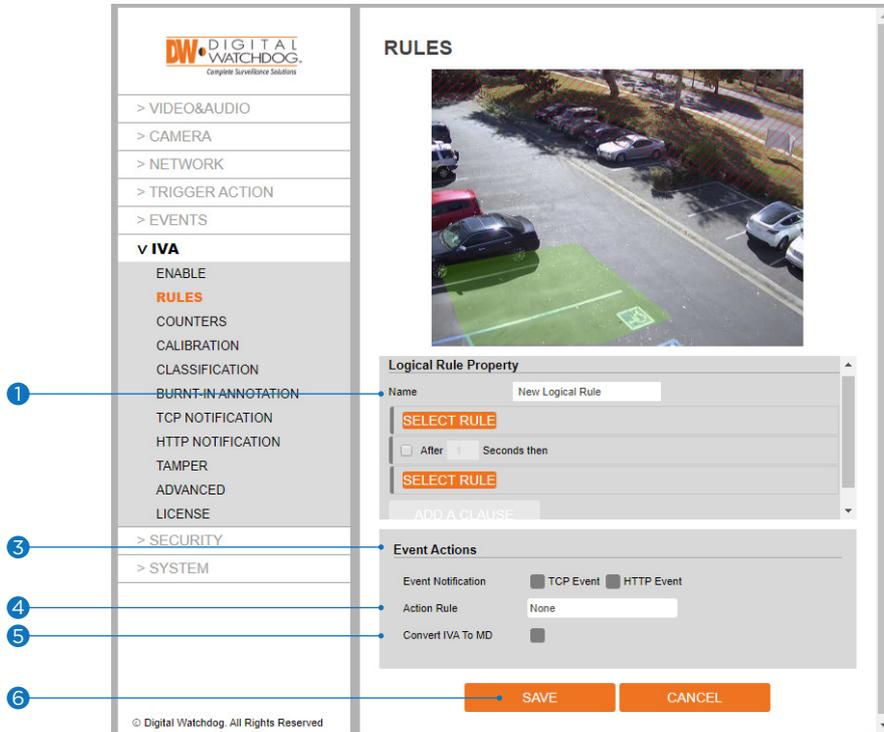
8 Click 'Save' to save all settings.

- ⚠ Click 'Cancel' to return to the previous setting.

IVA - Rules - Logical Rules

Logical Rules

Combine various rules and inputs using logical expressions, to reduce false events.



1 **Name:** Name the rule.

2 **Logical Condition:** Define the combination of rules included.

- SELECT RULE: The drop-down list will include all rules set up.
- “After ___ Seconds then”: Add the maximum time interval (in seconds) between two rules.
- ADD A CLAUSE: Add more rules.
- CHANGE: Change the selected rule to another rule.
- DELETE: Delete the last rule.

⚡ **Note:** Rules can only be assigned to one logical rule. They cannot be used on multiple logical rules.

3 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.

- TCP Event: Enable/disable TCP notification when an event occurs.
- HTTP Event: Enable/disable HTTP notification when an event occurs.

⚡ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.

4 **Action Rule:** Select to send an image of the camera’s view to an FTP/SMTP server when an event occurs.

⚡ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.

5 **Convert IVA to MD:** Pass an IVA event to the camera’s event engine, which is compatible with ONVIF.

6 Click ‘Save’ to save all settings.

⚡ Click ‘Cancel’ to return to the previous setting.

IVA - Rules – Logical Rules (Cont.)

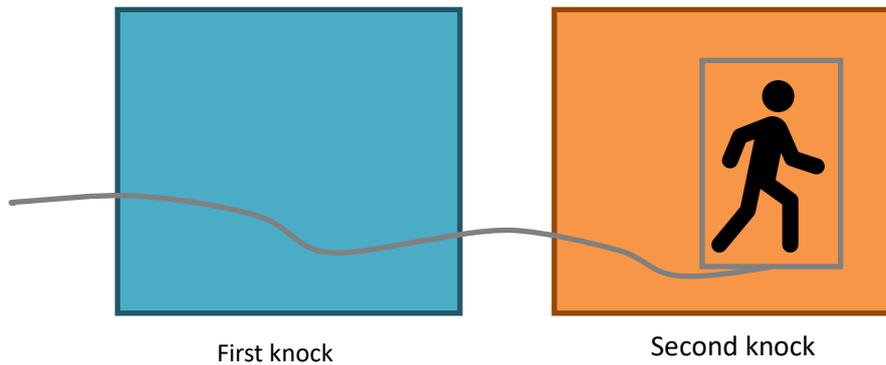
Using logical rules:

Logical rules can combine multiple rules into a single condition. Objects are checked against all combined rules before they become an event and trigger an action.

Example of a double-knock rule:

The double-knock rule is one of the most common scenarios used in video analytics. It uses 2 or more rules together to reduce false events. An object must trigger both rules before becoming an event and triggering an action.

If the zones used in rules for a double-knock scenario are in different locations, you can set the time threshold an object has before triggering the next rule to become an event.



How to create a logical rule:

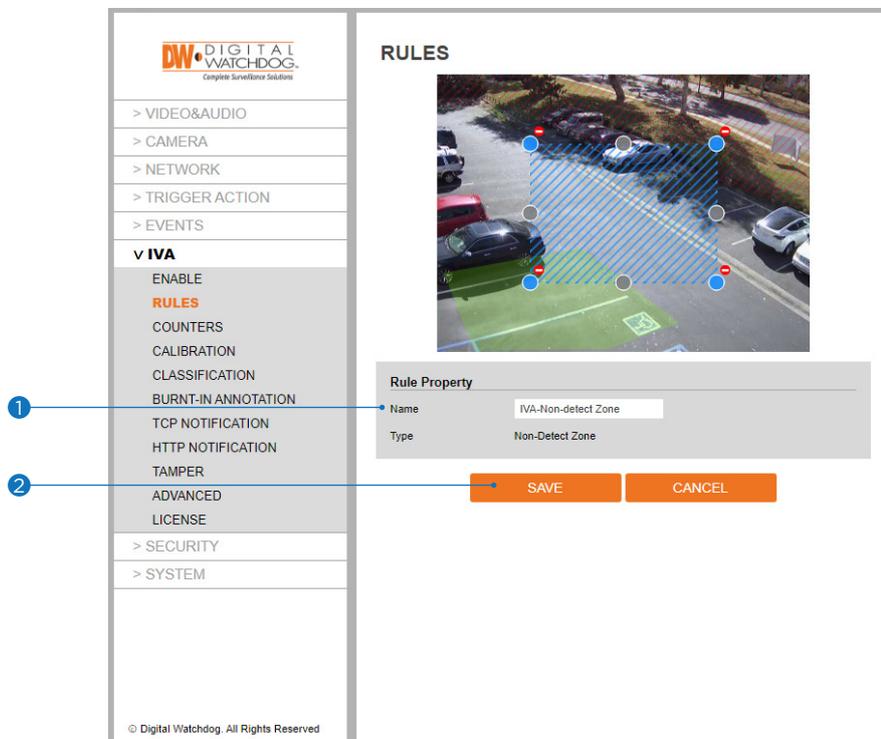
- 1 Select the two rules to be used in the double-knock logical rule.
- 2 Add a new logical rule.
- 3 Define a name for the rule.
- 4 Define the combination of rules and logical conditions that objects will be checked against.
- 5 Enable the check box in front of 'After ____ seconds then'. Define the number of seconds that an object needs to pass from one zone to the other to cause an event.
- 5 Define the action that will occur when the object triggers an event.
- 6 Click 'Save' to save all settings.
 - ⌘ Click 'Cancel' to return to the previous setting.

The screenshot shows a configuration window titled "Logical Rule Property". It has a "Name" field with the text "New Logical Rule". Below this, there are two rule clauses. The first clause is "First knock is triggered" with a "CHANGE" button to its right. The second clause is "Second Knock is triggered" with a "CHANGE" button to its right. Between these two clauses, there is a checked checkbox followed by the text "After 1 Seconds then". At the bottom of the window, there is an orange button labeled "ADD A CLAUSE".

IVA - Rules - Non-Detect Zone

Non-Detect Zone

The non-detection rule creates a zone that will not be processed through the analytics engine.



The rule will create a detection zone and overlay it on the live view.

Click and drag any of the corners to adjust the zone's size and position.

Click on a gray node to split the segment and create a more complex shape. To remove a segment, select the minus red sign next to a node.

1 **Name:** Name the rule.

2 Click 'Save' to save all settings.

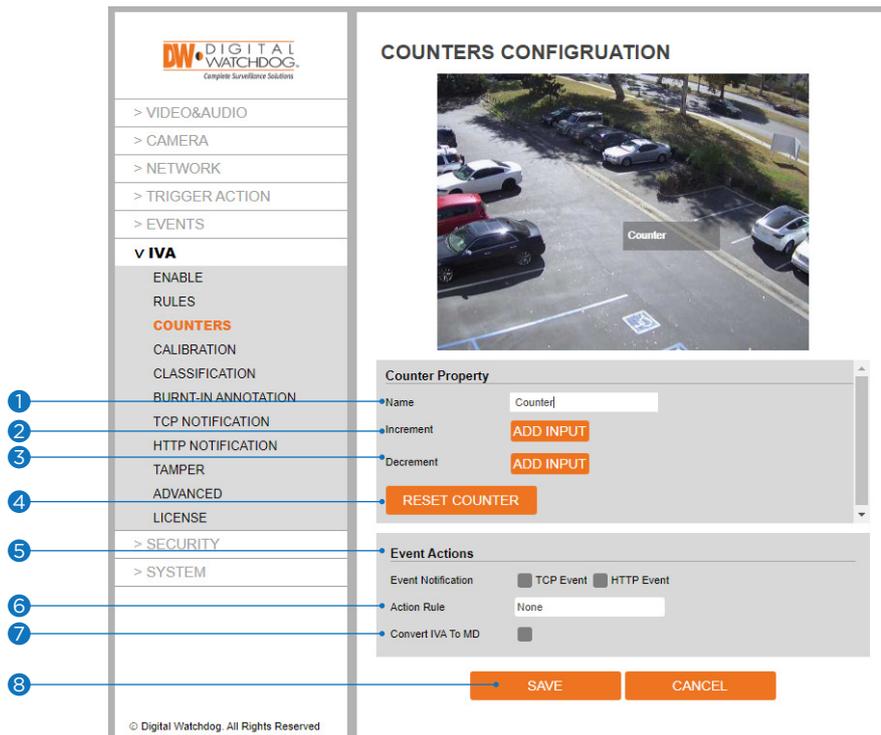
⌘ Click 'Cancel' to return to the previous setting.

IVA - Counters

Counters can be configured to count the number of times a rule is triggered. The counter rule can count the following:

- **Increment:** The counter value increases with each trigger of an event.
- **Decrement:** The counter value decreases with each trigger of an event.

More than one rule can be assigned to any counter's three inputs. This allows, for example, the occupancy of two rules to be reflected in a single counter. Multiple counters can also be created.



- 1 **Name:** Name the counter.
- 2 **Increment:** Select the rule from the available list which, when triggered, will add to the counter.
- 3 **Decrement:** Select the rule from the available list which, when triggered, will subtract from the counter.
 - ⚠ **Note:** Clicking the Reset Counter button will set the counter tally back to zero.
- 4 **Reset Counter:** Remove all current settings from the selected counter.
- 5 **Event Actions:** Define the action to occur when an event is triggered. Any combination of the available options is possible.
 - TCP Event: Enable/disable TCP notification when an event occurs.
 - HTTP Event: Enable/disable HTTP notification when an event occurs.
 - ⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.
- 6 **Action Rule:** Select to send an image of the camera's view to an FTP/SMTP server when an event occurs.
 - ⚠ **Note:** FTP and/or SMTP servers must be added and IMAGE TRANSFER must be set in the left navigation bar.
- 7 **Convert IVA to MD:** Pass an IVA event to the camera's event engine, which is compatible with ONVIF.
- 8 Click 'Save' to save all settings.
 - ⚠ Click 'Cancel' to return to the previous setting.

IVA - Counters (Cont.)

How to create a Counter:

- 1 Select 'Add' to add a new counter and display the available options.
- 2 Move the counter by clicking-and-dragging the block to the desired position on the screen.
- 3 Enter a name for the counter.
- 4 Select 'Add Input' next to the desired action (increment, decrement, occupancy). Select a rule to link to the counter.
- 5 Define the action to trigger when counter values change.
- 6 Select 'Save' to save the rule.

How to modify a Counter:

- 1 Highlight the counter and press 'Modify' to open the settings for the counter.
- 2 Modify the counter accordingly.
- 3 Select 'Save' to save the counter.

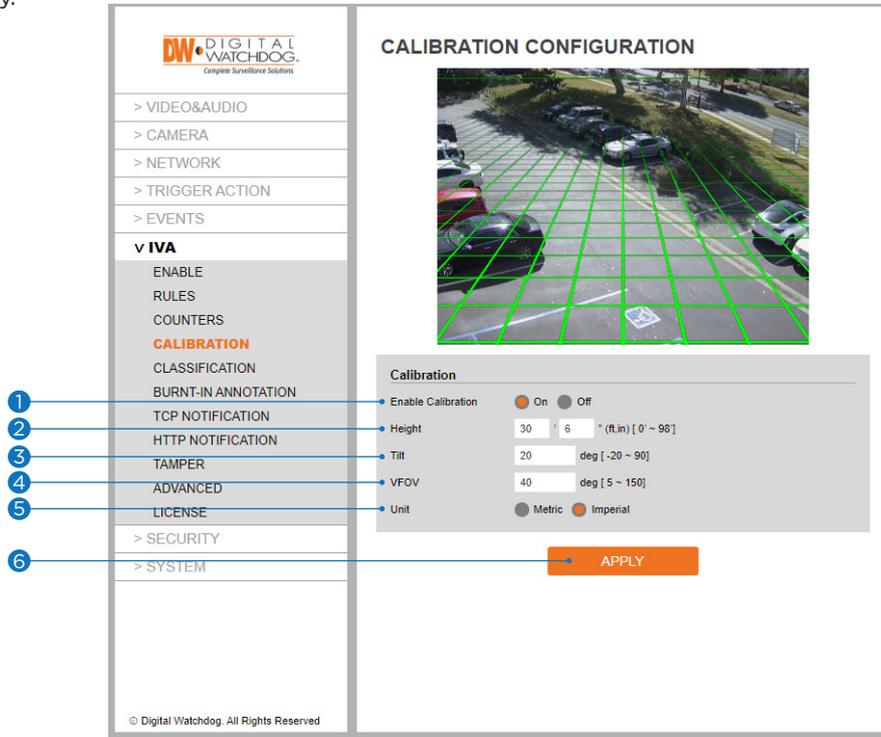
How to Delete a Counter:

- 1 Highlight the counter to be deleted.
- 2 Select 'Delete' to delete the counter from the list.

IVA - Calibration

Camera calibration is required for object identification and classification. The camera's height, tilt and vertical FOV are needed for proper calibration. The green grid on the camera's preview represents the ground plane. On the ground plane are several 3D mimics, representing people roughly 5.9ft (1.8 meters) tall. The mimics' size are based on the calibration parameters.

⚠ **Note:** The calibration process may take several attempts and experimentation depending on the scene complexity.



1 **Enable Calibration:** Turn the calibration feature on or off.

2 **Height:** If known, enter the camera's height. If the height is unknown, it is recommended to estimate it based on known object heights in the scene.

⚠ **Note:** A correct camera height measurement is required for accurate calibration and video analysis.

3 **Tilt:** If known, enter the camera's tilt. If the tilt angle is unknown, it is recommended to enter an estimated value and use the mimics as a guide to confirm or modify as needed.

4 **VFOV:** Define the vertical field of view of the camera.

⚠ **Note:** A correct VFOV value for the camera is important for accurate calibration and classification.

Without a correct vertical FOV, it may not be possible to get the mimics to match people at different positions in the scene.

5 **Unit:** Select the measurement unit used (metrics or imperial).

Verify and change as required.

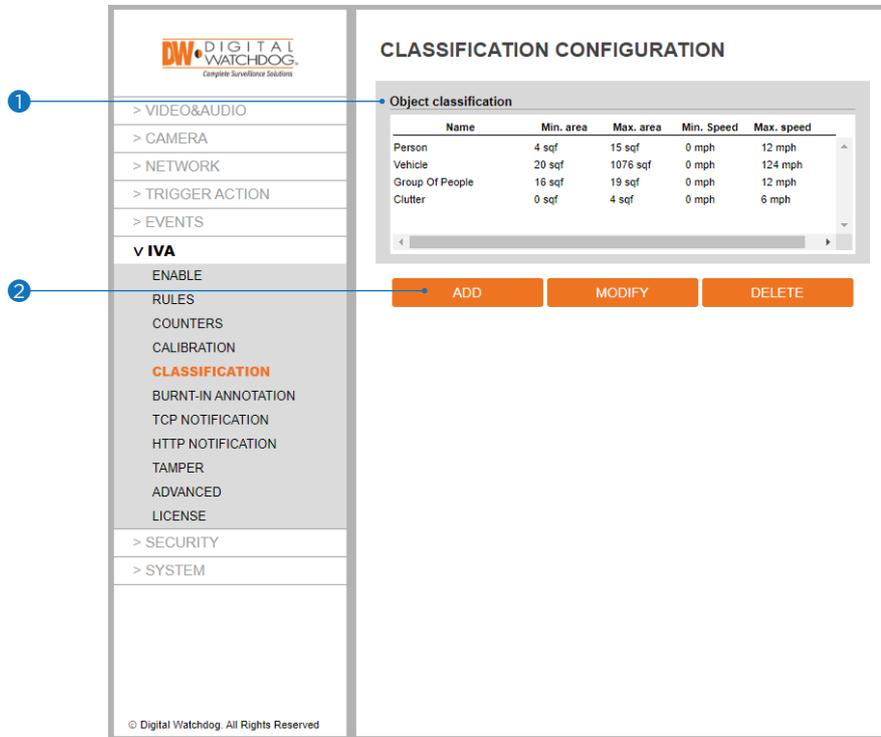
To confirm the camera is properly calibrated, the mimics must match people or other known objects in the scene, both by height and angle. The mimics can be moved around the scene to line up with people or objects of a known size to help the calibration process be more accurate. Adjustment of the camera's height, tilt and vertical field-of-view may be required to achieve this.

⚠ **Note:** As you change the calibration settings, you may need to reposition the mimics.

6 Select 'Apply' to save your changes.

IVA - Classification

Objects are detected, assessed, and assigned by the camera's IVA engine to one of the classifiers listed in the classification configuration. The camera's IVA engine has been preprogrammed with the most commonly used classifiers and is open for user configuration and adjustments.

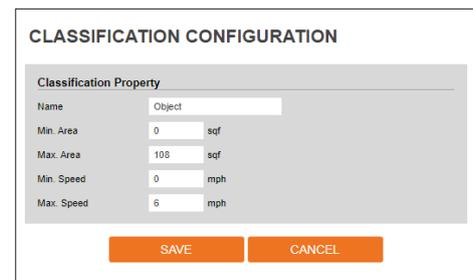


1 Object Classification List: All current classifiers will be detailed in the table.

2 Add/Modify/Delete:

Add: Click on the 'Add' button to create a new classification.

- Name: Enter a name for the new classifier.
- Min. Area: Enter the minimum area, in square feet, for objects to qualify under the new classifier.
- Max. Area: Enter the maximum area, in square feet, for objects to qualify under the new classifier.
- Min. Speed: Enter the minimum speed, in mph, for objects to qualify under the new classifier.
- Max. Speed: Enter the maximum speed, in mph, for objects to qualify under the new classifier.



Note: When creating or modifying classifiers, avoid overlapping parameters among classifiers this will cause the analytics engine to identify objects incorrectly.

Modify: Select a classification from the table and click 'Modify' to adjust the settings.

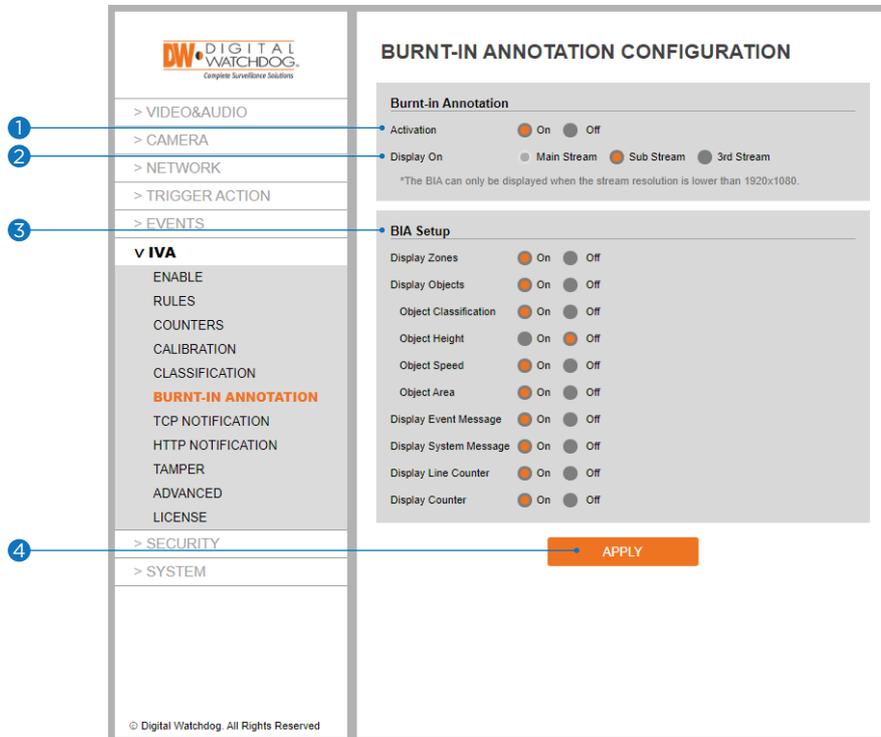
Delete: Select a classification from the table and click 'Delete' to remove it from the list.

Note: The calibration process must be completed before objects can be classified. Go to IVA>CALIBRATION

IVA - Burnt-In Annotation

The Burnt-In Annotation feature allows analytical data to be overlaid on the raw video stream. Annotations can include tracked objects, counters and system messages.

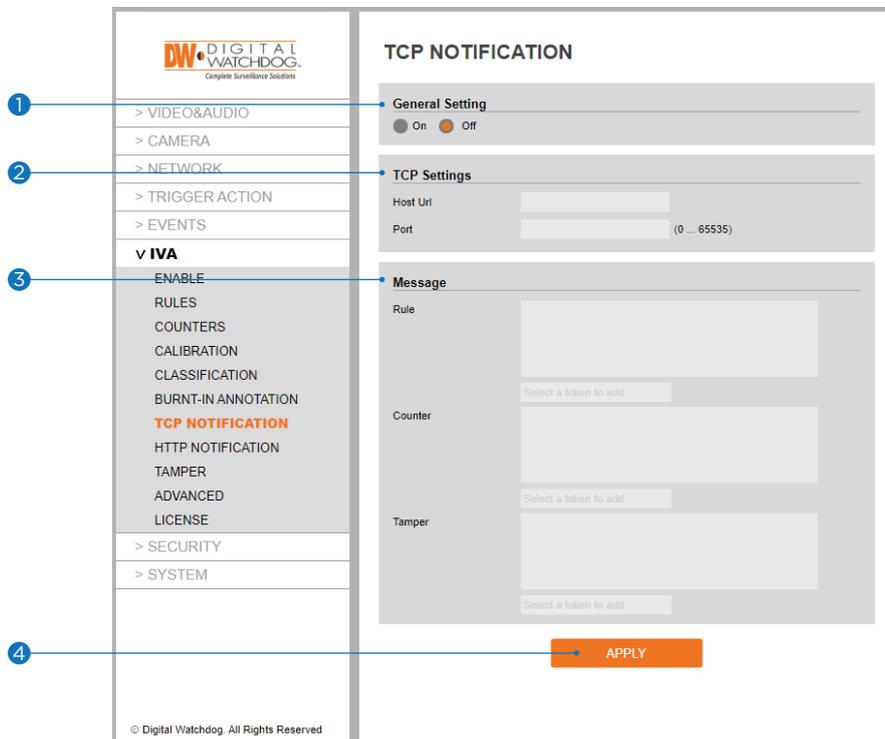
Note: To display object parameters such as speed, height, area and classifications, camera calibration must be completed. See IVA>CALIBRATION for more information.



- 1 Activation:** Turn on burnt-in annotation.
- 2 Display on:** Select to display the burnt-in annotation on the first, second or third streams of the camera.
Note: Burnt-in annotation is not available if the stream is set to a higher resolution than 2.1MP/1080p.
Main Stream: Display the burnt-in annotation on the mainstream.
Sub Stream: Display the burnt-in annotation on the sub stream.
3rd Stream: Display the burnt-in annotation on the 3rd stream.
- 3 BIA Setup:** Select which annotations to display.
Note: To display object parameters such as speed, height, area and classifications, camera calibration must be completed. See IVA>CALIBRATION for more information.
- 4** Select 'Apply' to save all changes.

IVA - TCP Notification

The TCP notification sends data to a remote TCP server when an event triggers a TCP notification. The format is configurable with a mixture of plain text and tokens. Tokens are used to represent the event's metadata and will be included when a rule is triggered.



1 General Setting:

ON/OFF: Enable or disable TCP notifications.

⚠ **Note:** Disabling TCP notifications will impact the rules' ability to send notifications through this action. Rules can still show a link to this action, but the action will not occur when the rule is triggered.

2 TCP Settings:

Host URL: Enter the IP address or hostname of the remote TCP server receiving the event data.

Port: Enter the port information associated with the TCP server.

3 Message:

Rule: Enter a custom message for the TCP notification when linked to rules. You can include tokens from the list available. Token values will be replaced with the event metadata when triggered.

⚠ **Note:** Select from the available tokens in the drop-down menu below the message window.

Counter: Enter a custom message for the TCP notification when linked to counters. You can include tokens from the list available. Token values will be replaced with the event metadata when triggered.

⚠ **Note:** Select from the available tokens in the drop-down menu below the message window.

Tamper: Enter a custom message for the TCP notification when linked to the camera tamper. You can include tokens from the list available. Token values will be replaced with the event metadata when triggered.

⚠ **Note:** Select from the available tokens in the drop-down menu below the message window.

4 Select 'Apply' to save your changes.

⚠ **Note:** See the tokens page for a full list of the token system and example templates.

IVA - HTTP Notification

The HTTP notification sends a text/plain HTTP request to a remote endpoint when an event is triggered. The format is configurable with a mixture of plain text and tokens. Tokens are used to represent the event's metadata and will be included when a rule is triggered.

The screenshot shows the IVA configuration interface for HTTP notifications. It features a sidebar on the left with a navigation menu and a main configuration panel on the right. The sidebar includes categories like VIDEO&AUDIO, CAMERA, NETWORK, TRIGGER ACTION, EVENTS, IVA (with sub-items like ENABLE, RULES, COUNTERS, CALIBRATION, CLASSIFICATION, BURNT-IN ANNOTATION, TCP NOTIFICATION, HTTP NOTIFICATION, TAMPER, ADVANCED, LICENSE), SECURITY, and SYSTEM. The main panel is titled 'HTTP NOTIFICATION' and contains four numbered callouts: 1. General Setting: A radio button for 'On' (selected) and 'Off'. 2. HTTP Settings: Fields for URL (http://), Method (GET), User ID, and Password. 3. Query: A 'Rule' field containing a complex query string, and three fields for 'Counter' and 'Tamper' with 'Select a token to add' dropdown menus. 4. An 'APPLY' button at the bottom right. The footer of the sidebar says '© Digital Watchdog. All Rights Reserved'.

1 General Setting:

ON/OFF: Enable or disable HTTP notifications.

⚠ **Note:** Disabling HTTP notifications will impact the rules' ability to send notifications through this action. Rules can still show a link to this action, but the action will not occur when the rule is triggered.

2 HTTP Settings:

URL: Enter the IP address or hostname of the remote server receiving the event data.

Method: Select the HTTP request method. Select from GET (default), POST, or Milestone.

User ID: Enter the username used to send the notification.

Password: Enter the username's password used to send the notification.

3 Query:

Rule: Enter a custom message for the HTTP notification when linked to rules. You can include tokens from the list available. Token values will be replaced with the event metadata when triggered.

⚠ **Note:** Select from the available tokens in the drop-down menu below the message window.

Counter: Enter a custom message for the HTTP notification when linked to counters. You can include tokens from the list available. Token values will be replaced with the event metadata when triggered.

⚠ **Note:** Select from the available tokens in the drop-down menu below the message window.

Tamper: Enter a custom message for the HTTP notification when linked to the camera tamper. You can include tokens from the list available. Token values will be replaced with the event metadata when triggered.

⚠ **Note:** Select from the available tokens in the drop-down menu below the message window.

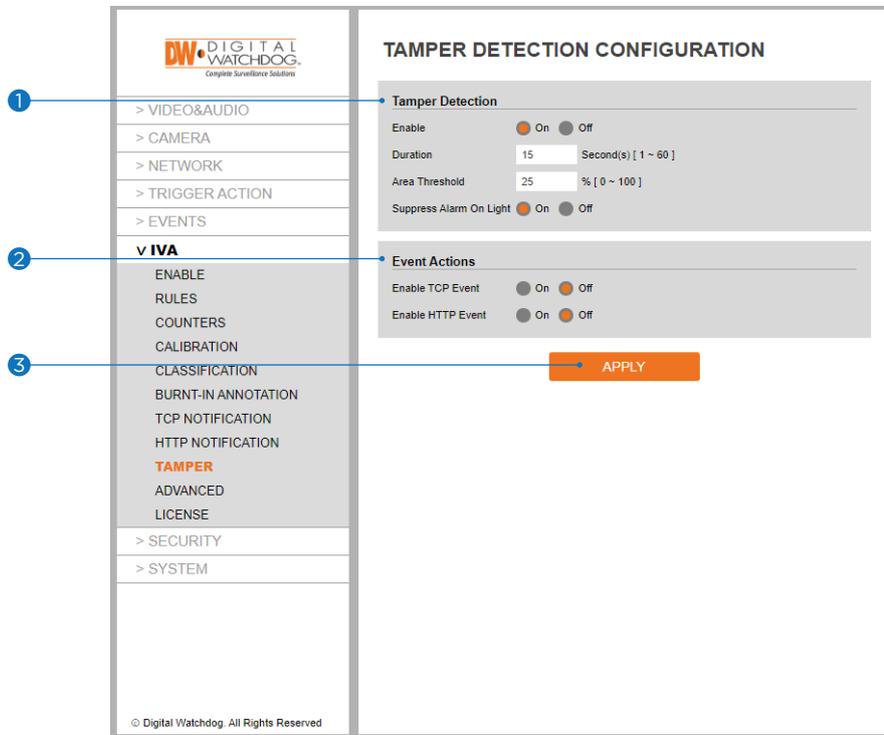
Enable URL encoding: Select whether to use URL encoding for the notification.

4 Select 'Apply' to save your changes.

⚠ **Note:** See the tokens page for a full list of the token system and example templates.

IVA - Tamper

The Tamper feature detects camera tampering events such as bagging, de-focus and general movement of the camera. This is achieved by detecting large persistent changes in the pixels in the image.



1 Tamper Detection:

- **Enable:** Choose to enable or disable the tamper detection feature.
 - **Duration:** Set the duration (in seconds) the image must be changed before triggering the alarm.
 - **Area Threshold:** Set, as a percentage, the area of the image that must change before triggering the alarm.
 - **Suppress Alarm on Light:** Compensates for scenarios where sudden changes in light (as lights being switched on/off) that can cause false tamper events.
- ⚠ **Note:** The option will reduce sensitivity to genuine alarms and should be used with caution.

2 Event Actions:

Define the action to occur when an event is triggered. Any combination of the available options is possible.

- TCP Event: Enable/disable TCP notification when an event occurs.
- HTTP Event: Enable/disable HTTP notification when an event occurs.

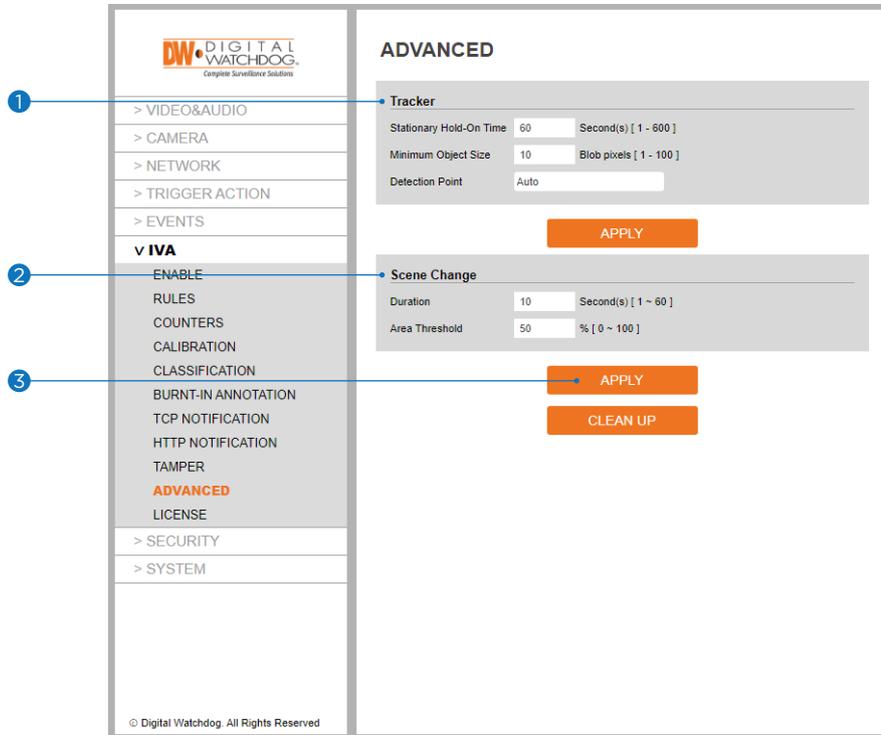
⚠ **Note:** TCP/HTTP notification actions must be configured separately under the left navigation bar.

3 Select 'Apply' to save all changes.

IVA - Advanced

The advanced menu includes settings relating to how the analytics engine tracks objects.

⚠ **Note:** In most installations the default configuration will apply.



1 Tracker:

Stationary Hold-on Time: Set the amount of time (in seconds) an object continues to be tracked and classified once it becomes stationary.

Minimum Object Size: Set the size (in blob pixels) of the smallest object considered for tracking.

Detection Point: Select the tracking point that will be used to evaluate objects against rules.

- **Automatic:** The detection point is automatically set based on how the calibration is configured.
- **Centroid:** The detection point for objects is located in the middle of the bounding box.
- **Mid-bottom:** The detection point for objects is located at the center of the bottom line of the bounding box.

2 Scene Change:

● **Duration:** Set the amount of time (in seconds) an object continues to be tracked and classified once it becomes stationary.

● **Area Threshold:** Set the size (in percentage) of the smallest object considered for tracking.

⚠ **Note:** Changing the detection point used can affect the point at which objects will trigger an event.

3 Select 'Apply' to save all changes.

IVA - Tokens

Tokens are used with event actions such as TCP and HTTP notifications. They are automatically filled-in with the metadata for the event. This allows the details of the event to be specified in the message, such as the location of the object, type of event, etc.

List of tokens: Below is a list of the available tokens and with a description of the data they provide.

{{name}} - The name of the event.

{{id}} - The unique ID of the event.

{{type}} - The type of event. This is usually the type of rule that triggered the event.

{{status}} - The status of the event.

{{iso8601}} - The event time in ISO 8601 format. For example:

Start time (ISO 8601 format): {{iso8601}} Start time (ISO 8601 format): 2017-04-21T10:09:42+00:00

{{time}} - The event time in Unix time stamp format. For example: time: {{time}} time: 1582308244.376

{{ip}} - The IP address of the device.

{{host}} - The hostname of the device.

{{datetime}} - The event time in the format DD MM D HH:MM:SS YYYY 'Tue Jan 1 12:00:00 2019'. for example: time: {{datetime}} time: Tue Jan 1 12:00:00 2019

{{zoneid}} - The zone ID of the event.

{{ruleid}} - The rule ID of the event.

{{bb}} - The bounding box of the object.

{{objectclass}} - The object class of the object triggering the rule.

{{mac}} - The MAC address of the device.

An example of using multiple tokens for notifications:

Event #{{id}}: {{name}} Event Actions: {{type}} Start time (ISO 8601 format): {{iso8601}} time: {{time}}

Device: {{host}}: {{ip}}: {{mac}} Object bounding box: {{bb}} Classification: {{objclass}}

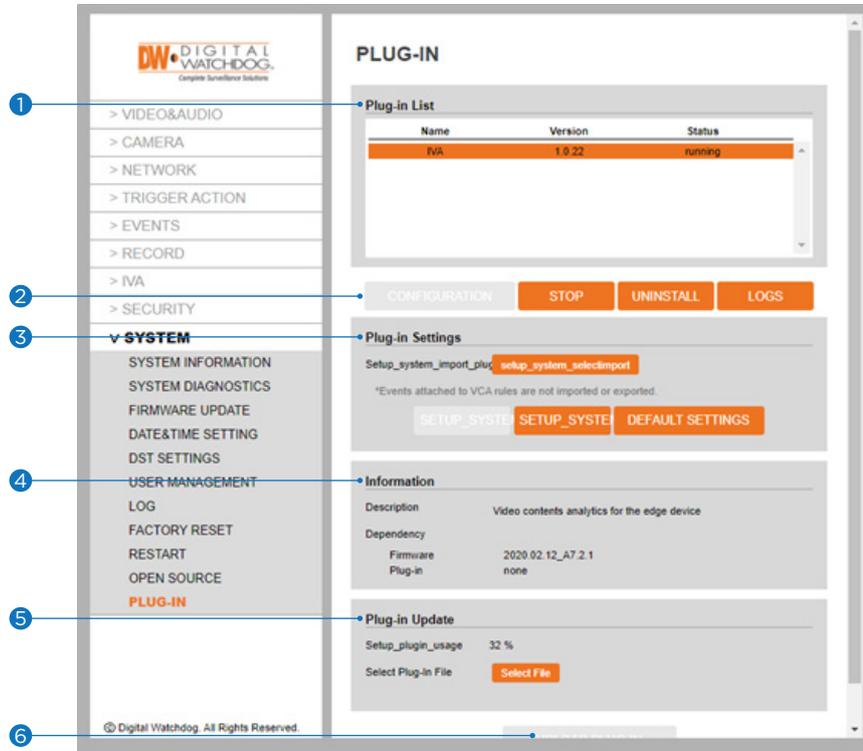
This would produce the following text:

Event #350: My event name Event Actions: presence Start time (ISO 8601 format): 2017-04-21T10:09:42+00:00

time: 1492769382 Device: Camera: 10.0.5.2: AB:CD:EF:GH:01:02 Object bounding box: [45251:12069:14004:8563] Classification: Vehicle

Appendix – IVA Edge Plug-in

The IVA edge software is a plug-in that can be installed/uninstalled from the camera. It is necessary to activate the IVA rules and features on the camera and can be downloaded from our website. Updates can be issued to provide additional features and fixes and the plug-in can be installed or uninstalled as required.



- 1 **Plug-in List:** Shows all plug-ins present on the camera.

- 2 **Configuration:** Shows how to set up the plug-in. Non-adjustable.
 - Start/Stop:** Start/stop the selected plug-in from the list.
 - Uninstall:** Remove the selected plug-in from the list.
 - Logs:** Download the selected plug-in logfile from the list.

- 3 **Plug-in Settings:** Open for additional settings available for the selected plug-in.
 - Import:** Import a configuration file.
 - Export:** Export the configuration file.
 - Default Settings:** Restore the plug-in to default settings and clear any IVA configurations.
 - ⚠ **Note:** When selecting the default settings, the plug-in will stop working. To restart the plug-in, highlight it from the list and select 'Start'.
 - ⚠ **Note:** Export does not include event settings for each rule such as HTTP, TCP and Action settings.

- 4 **Information:** Shows details about the selected plug-in.

- 5 **Plug-in Update:** Select the Plug-in file on your computer by clicking the 'Select File' button.

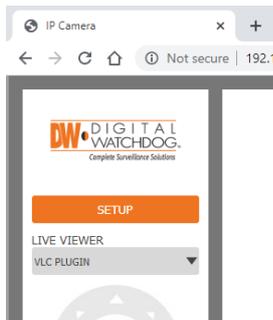
- 6 **Upload Plug-in:** Click to start the update. Progress of uploading will be displayed using progress bar.

Appendix – IVA Edge Plug-in (Cont.)

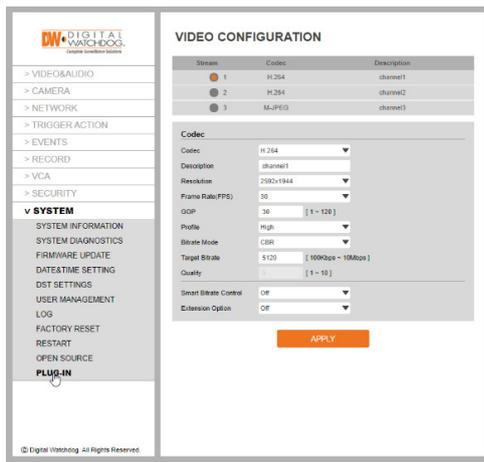
Installing

The IVA edge software plug-ins are available to download from our website at www.digital-watchdog.com. Navigate to your camera's product page and under the "Software" tab, download the most recent version of the plug-in.

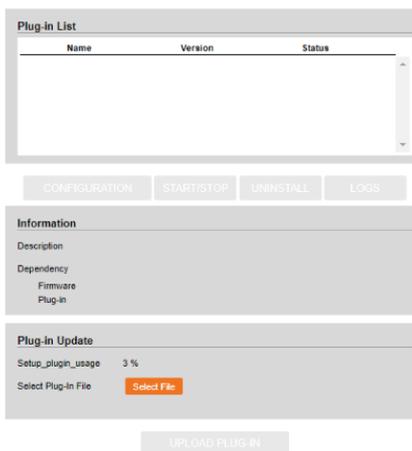
- 1 Click 'Setup' to access the camera's menu.



- 2 Click 'System' and go to 'Plug-in'.



PLUG-IN



- 4 Click 'Select file' and select the plug-in file you downloaded previously.

- 5 Click 'Upload Plug-in' to start the installation process.

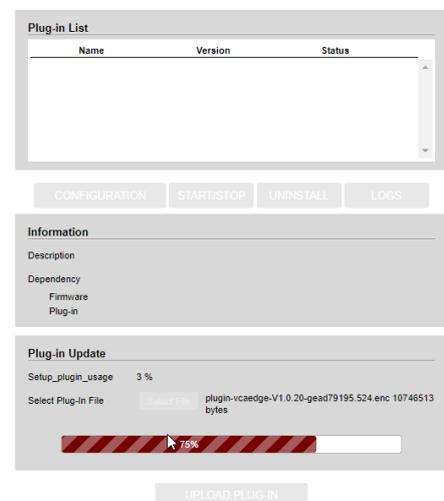
- 6 When finished you will be prompted to activate the plug-in, click 'OK'.

Uninstalling

Select the plug-in's name from the list and click the 'uninstall' button.

- ⚠ **Note:** Uninstalling the plug-in will remove all the settings associated with the plug-in.

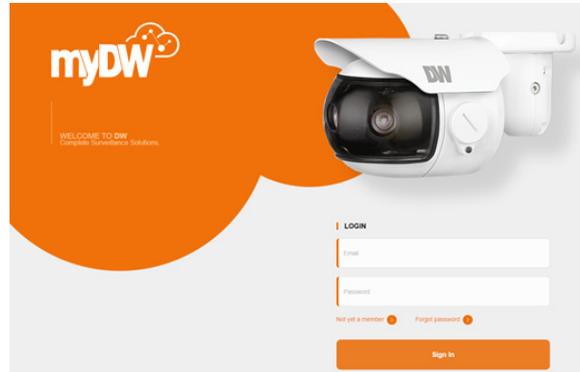
PLUG-IN



Appendix – License Purchasing

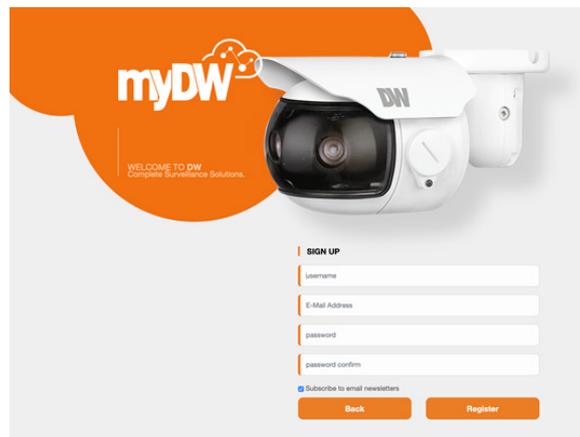
To purchase an IVA+ license, DW users must have an active myDW account. To create an account:

- 1 Go to myDW.cloud.
- 2 If you have a myDW account, enter your e-mail, password, and then click 'Sign In' on the myDW login page.

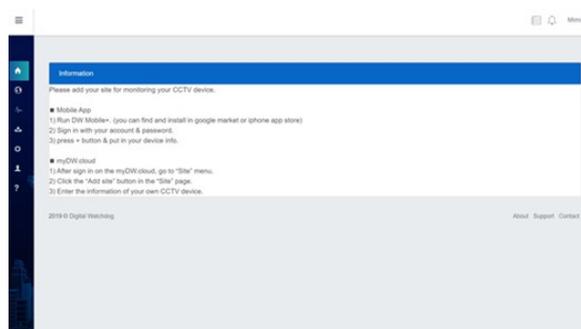


3 If you do not have a myDW account, click on 'Not yet a member' to register. Enter the following information and then click Register. The Verify Email Address confirmation email is sent to your email address.

- Username
- E-mail Address
- Password
- Confirm the password
- Optional: Select Subscribe to email newsletters



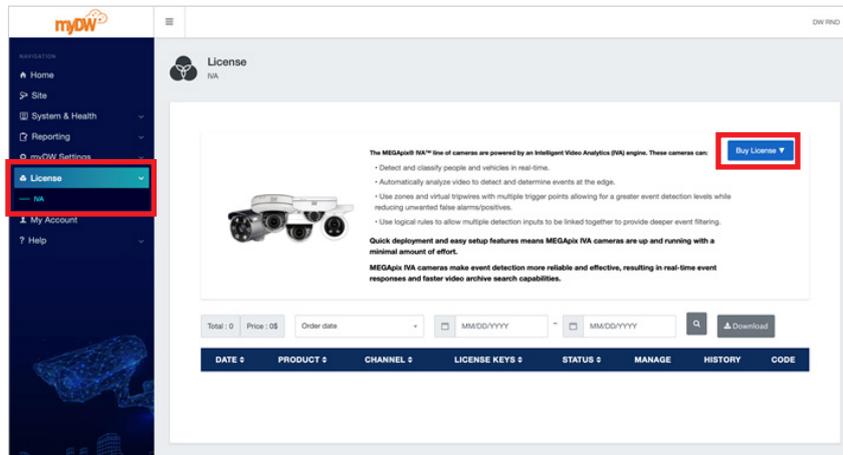
4 You will receive an e-mail verification to confirm and activate your account. Click 'Verify E-mail Address'. Once confirmed, the myDW homepage below will display.



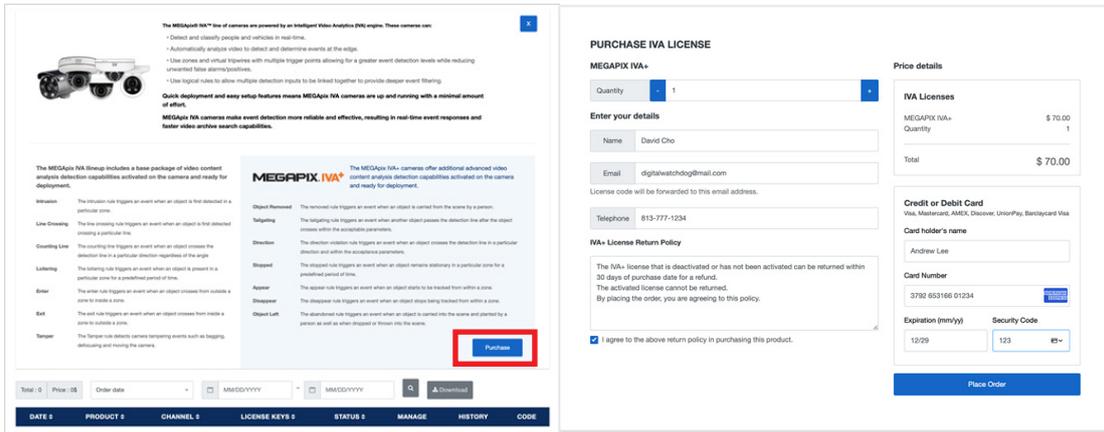
Appendix – License Purchasing (Cont.)

Once your myDW account is activated, follow the instructions below to purchase the IVA+ licenses:

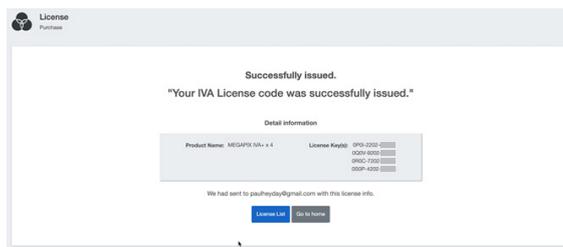
- 1 Go to [myDW.cloud](https://mydw.cloud) and login to your account.
- 2 On the left navigation bar, go to License > IVA.
- 3 Click the 'Buy License' button on the top right.
 - ❗ MEGApix IVA cameras come pre-loaded with an IVA license and do not require additional license purchasing. For DW customers with existing cameras, the license is offered at no additional cost via a firmware update. Contact DW's sales team for more information.



- 4 Click the 'Purchase' button at the bottom of the license description.
- 5 Enter the following information:
 - Quantity (you must purchase one license per camera).
 - Name, e-mail and phone number.
 - Payment method and information.
- 6 Click 'Place Order'.



- 7 If the order has been placed successfully, the confirmation message below will appear:



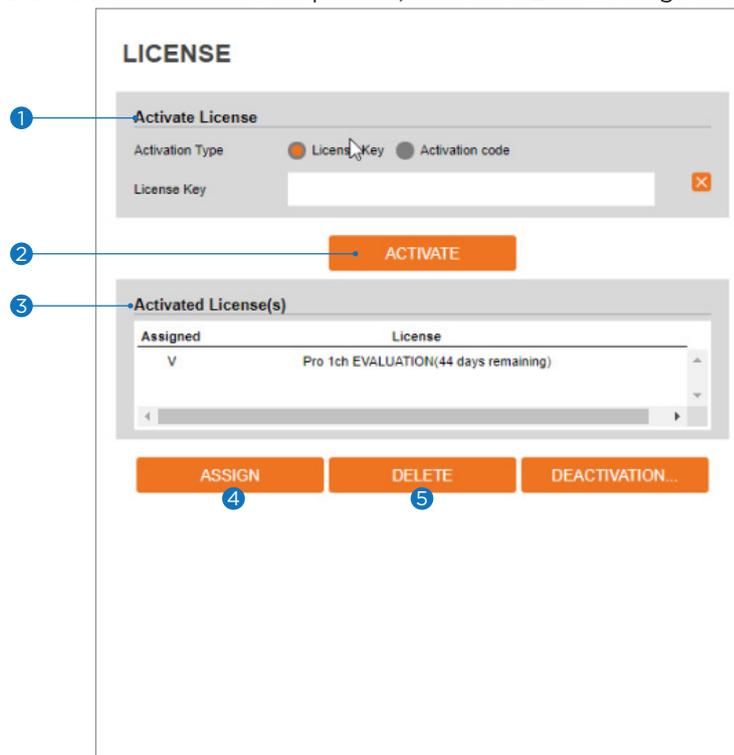
Appendix – License Activation on the Camera

IVA analytic features are pre-activated. Further activation is only necessary for the MEGApix IVA+ license.

NOTE: Deactivation and transference of a license to another IVA capable camera is possible, however is unnecessary. The only instance that I could see someone doing this for practicality is if an IVA camera is being replaced and the camera owner would like to use the IVA+ license on the replacement camera

Activating a purchased licenses can be done directly from the camera's settings, or remotely from the myDW dashboard.

To activate the licenses from the camera's setup menu, click on "SETUP" and go to IVA > LICENSE



1 Activate License -

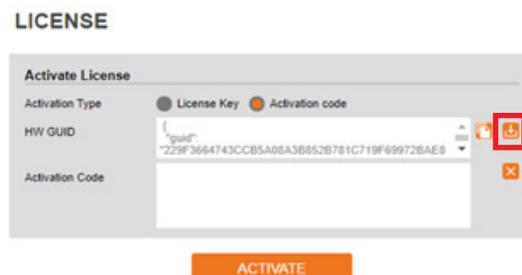
- Choose to activate the license for this camera using a license key or an activation code.
- Choose the license key option if your camera is connected to the internet.
- Choose the activation code option if your camera is not connected to the internet.

2 Activate -

- If 'License Key' is selected, copy the license key from your myDW dashboard in the license key field in the camera's setup page, and press 'Activate' to apply it to the camera.

DATE	PRODUCT	CHANNEL	LICENSE KEYS	STATUS	MANAGE
08/31/2020 11:57:02	MEGAPIX IVA+	1	0B0C-720I	Available	Activate Return

- If 'Activation Code' is selected, press the download button to the right of the HW CODE and save the file to your drive.

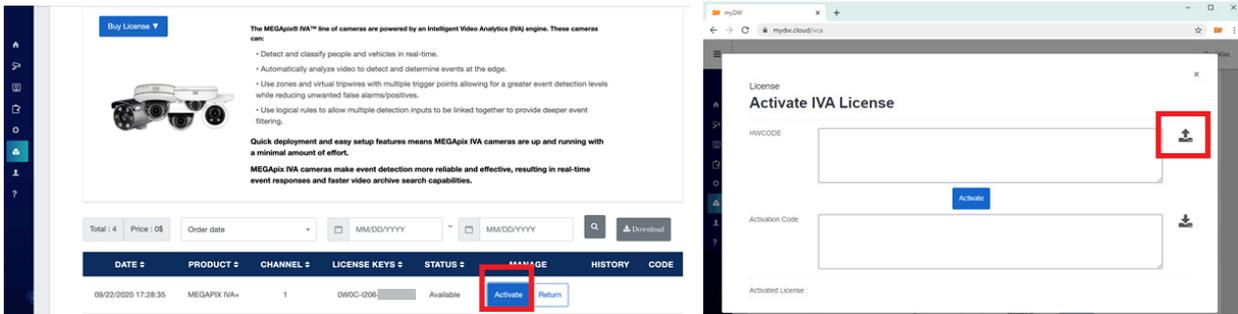


Appendix – License Activation on the Camera (Cont.)

Go to myDW.cloud and log into your account. All your purchased licenses will be under "License" from the left navigation bar.

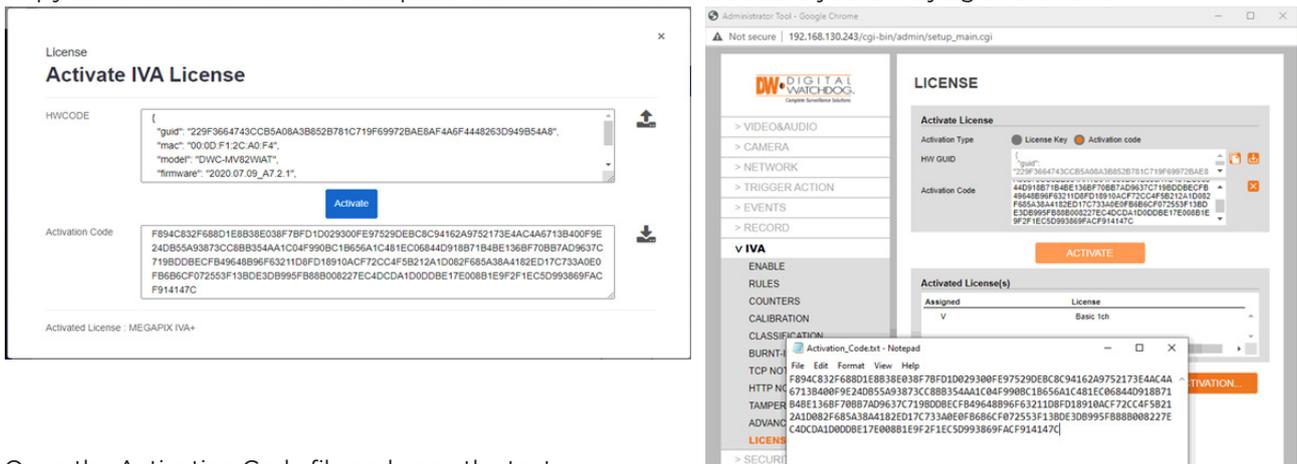
Select the license you want to activate and press the 'Activate' button next to it.

In the new popup window, press the upload button and select the HW CODE file downloaded from the camera. Press 'Activate'.



The system will generate an activation code in the bottom field. Download that activation code by pressing the download button next to the field.

Copy the activation code to a computer that has access to the camera you are trying to activate.



Open the Activation Code file and copy the text.

Paste the activation code in the camera's web browser setup page, under Activation Code and press 'Activate'.

3 Activated License(s) – Lists the installed licenses.

Note: Although you can install multiple licenses, only one license can be used at any time.

4 Assign: Apply the selected license to use in the camera.

5 Delete: Highlight a license from the list and click 'Delete' to remove it from the camera.

Note: You cannot delete a license if it is in use.

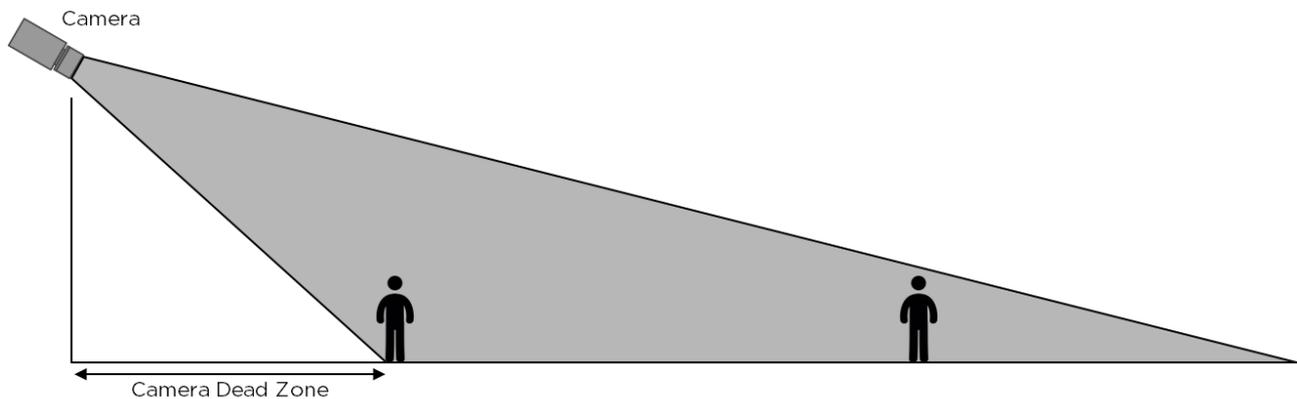
Appendix – Camera Installation Guide

Camera Installation

A camera should be installed securely, connected properly, mounted firmly, have a clean lens, have the appropriate focal length and in focus. A camera's focus should aim to maximize the amount of the scene in focus. All cameras should be mounted securely to minimize camera shake and lighting conditions should be stable. This is also to avoid scene movement due to camera movement which can create false targets in the tracker instantly.

Camera Height and Object Size

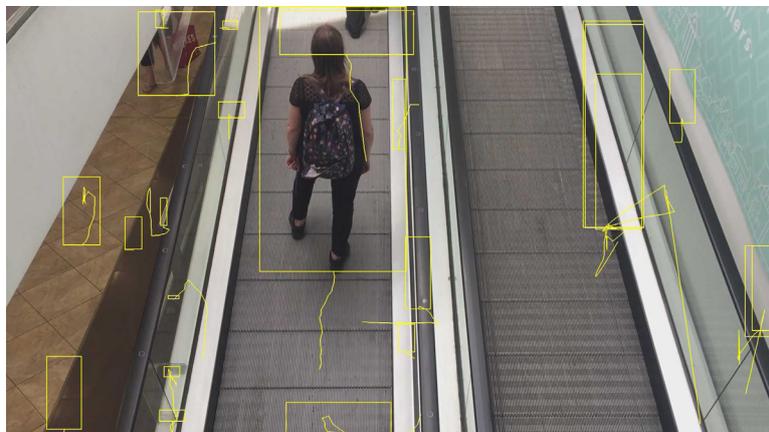
Cameras should be mounted so that the dead zone of one camera is covered by another camera's field of view.



Each camera should be mounted so that all objects appear in the camera's field of view for no less than 2 seconds (or 10 frames). The absolute minimum target size that can be detected is 0.02% of the screen area. At full HD resolution, this corresponds to an area of 17x30 pixels. Every camera should be mounted such that all objects to be detected occupy no more than 10% of the camera's field of view.

Moving background

The IVA engine is built to try to find and track objects based on the background modeling to continue learning the scene. If some part of the background keeps changing, false object tracking is likely to increase. In the example below, not only people on escalators or moving walks will be tracked as objects, but parts of the escalator or moving walk can be tracked as well.



Appendix – Camera Installation Guide (Cont.)

Lighting and shadow

As with any task involving cameras and optics, lighting quality is very important. A camera should be placed in such a way that it does not receive direct light from any source and is not subject to lens flare. The ideal situation for tracking is consistent lighting, with minimal effects of shadows and reflections. Entrance doors facing strong sunlight can pose serious problems for tracking performance, as they will throw strong moving shadows as they are opened and closed.



The thick shadow of a shaking tree may make false detection.

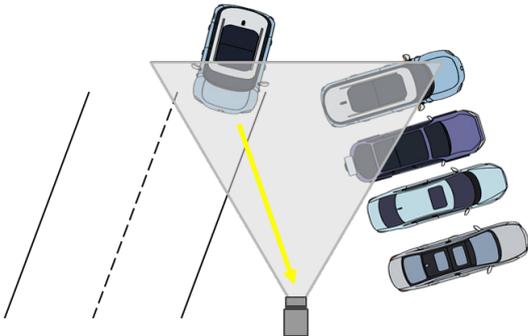
In general, tracking will be better for indoor scenarios when under artificial lighting. However, one should avoid, if possible, placing cameras too close to fluorescent lights particularly if the light source is close to the camera viewing axis. Light can strike the dome of the camera and reflect directly into the lens, which can create visual artifacts such as banding in the image. Position the camera so that there is not a direct light path from the fluorescent tubes to the camera dome. If that is not possible, make sure to maximize the distance between the tube and the camera.

Night Performance

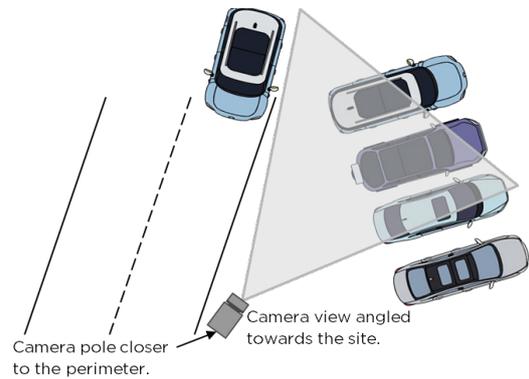
When using the IVA cameras at night, the environment will need to be properly lit via external lights, or the camera should be equipped with IR LEDs. Every camera should be installed so it does not receive any direct light from any source (includes the vehicle's headlights). This means pointing at the traffic moving away from the camera. Variations in lighting should be minimized when possible. The IVA engine's night performance depends on the camera's performance and the scene's lighting. If the camera image is clear and moving objects have good contrast against the background, the IVA engine will work very well. Dark areas where the moving objects have low contrast reduce the effectiveness of the IVA engine in detecting and tracking objects.



Appendix – Camera Installation Guide (Cont.)



Headlights glare can cause view issues.



Camera's view adjusted to compensate.

Raindrop, Snow, and Insects Obstruction

Environmental factors such as rain, snow and insects can cause object detection and tracking problems for the IVA engine and in severe cases, these can cause false alarms. For optimal results, it is best to avoid raindrops or snowflakes on the camera faceplate. If possible, mount the camera under the roof overhang where the camera can get some protection. Regularly scheduled cleaning of the camera to keep its dome clear of any environmental obstacles is also recommended.



Raindrops on the lens or dome.



Spider webs in front of the camera lens.

Warranty Information

Digital Watchdog (referred to as “the Warrantor”) warrants the Camera against defects in materials or workmanship as follows:

Labor: For the initial five (5) years from the date of the original purchase if the camera is determined to be defective, the Warrantor will repair or replace the unit with a new or refurbished product at its option, at no charge.

Parts: Also, the Warrantor will supply replacement parts for the initial two (2) years.

To obtain warranty or out of warranty service, please contact a technical support representative at 1+ (866) 446-3595, Monday through Friday from 9:00 AM to 8:00 PM EST.

A purchase receipt or other proof of the date of the original purchase is required before warranty service is rendered. This warranty only covers failures due to defects in materials and workmanship which arise during normal use. This warranty does not cover damages which occurs in shipment or failures which are caused by products not supplied by the Warrantor or failures which result from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, modification, faulty installation, setup adjustments, improper antenna, inadequate signal pickup, maladjustments of consumer controls, improper operation, power line surge, improper voltage supply, lightning damage, rental use of the product or service by anyone other than an authorized repair facility or damage that is attributable to acts of God.

Limits and Exclusions

There are no express warranties except as listed above. The Warrantor will not be liable for incidental or consequential damages (including without limitation, damage to recording media) resulting from the use of these products, or arising out of any breach of the warranty. All express and implied warranties, including the warranties of merchantability and fitness for a particular purpose, are limited to the applicable warranty period set forth above.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights from vary from state to state.

If the problem is not handled to your satisfaction, then write to the following address:

Digital Watchdog, Inc.
ATTN: RMA Department
16220 Bloomfield Ave
Cerritos, CA 90703

Service calls which do not involve defective materials or workmanship as determined by the Warrantor, in its sole discretion, are not covered. Cost of such service calls are the responsibility of the purchaser.



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Technical Support Hours: Monday-Friday 9 a.m. to 8 p.m. Eastern Time