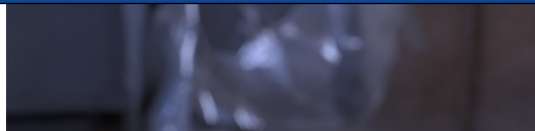




# Camera Installation Hints

with MOBOTIX MOVE Cameras (V1.0)

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# 1 Basic Camera Installation Recommendations

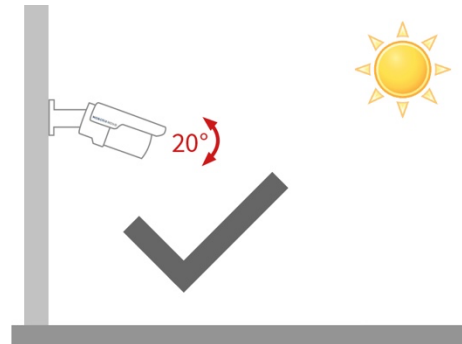
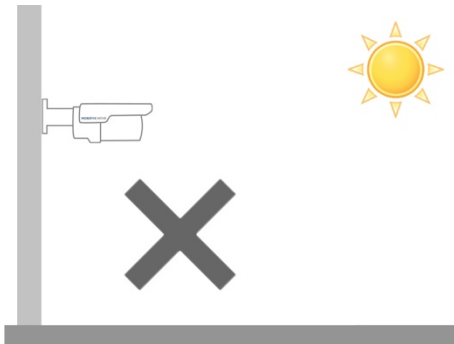
The overall video-quality and video analytics performance depends hugely on the installation of the camera based on the environmental conditions to be faced.

## 1.1 Scenery Illumination

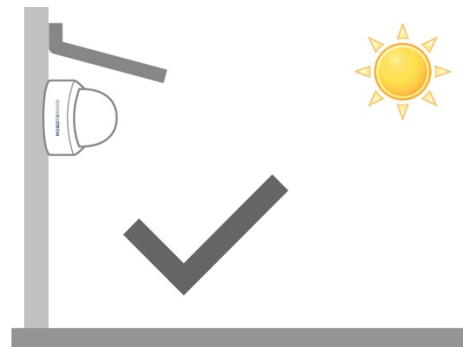
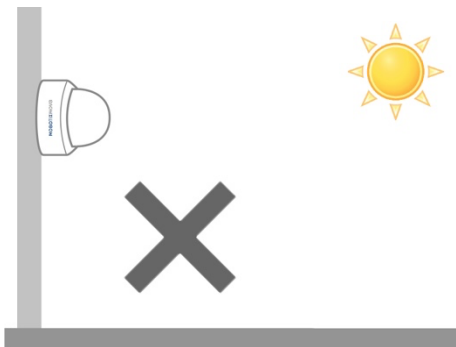
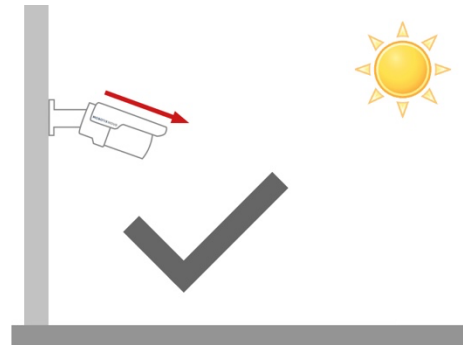
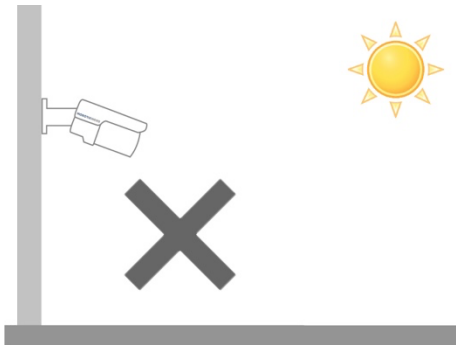
Surveillance areas require suitable 24/7 illumination / lighting to achieve good video analytic results. Minimum camera sensitivity levels need to be ensured. Insufficient ambient light (Day-Light / Artificial illumination (IR)) will result in “noisy / grainy” video-signal that has direct impact on the video quality and may as well result in “false” alarms in combination with video-analytics. Sudden changes in illumination, e.g., switching on or off light / car headlights can cause distortion of the video analytic functionality as well.

## 1.2 Camera Mounting / Positioning / Camera View

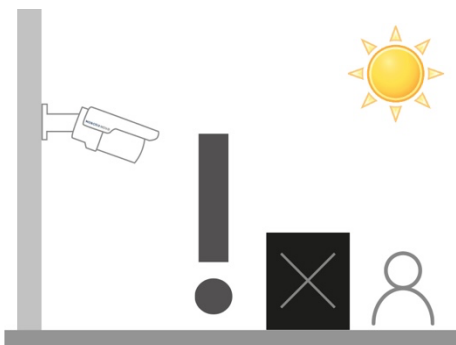
To reduce the impact of environmental conditions (rain, snow, sunlight, etc.), we recommend tilting the camera vertically min. 20° to protect the front-glass / dome-bubble (optical part) from rain and direct sunlight. Protect the optical part of the camera front by suitable protection shields (i.e., move camera-sunshield as far as possible to the front or mount protective shields)



In any case avoid facing the camera view directly into sunlight or objects with “strong” reflections. Where applicable, install camera view towards the North to avoid facing direct to the sunlight in the South.



The camera installation height and angle of view has direct impact on the video-analytic quality due to resulting perspective, object-segmentation and background scenery coverage by objects in the foreground.



### 1.3 Object Size, Distance and focal length

Pixel size of the object is an important element to video analytics. Most video analytics require a minimum pixel size (e.g., 10px x 10px). Small object sizes (Long Object distance or lens wide-angle) may become difficult to be recognized, identified or detected. In case the pixel sizes of the objects are too large (Short Object distance or high Lens zoom factor), it can distort the performance of the analytics (e.g., reflecting light into the camera). Consider that same object appears quite small in the scenery background view but will become very large if moving in front of the camera. As well consider that “fast” moving objects in front of the camera may only appear in 1 videoframe and as such can be “hard” to detect or track in the scenery.



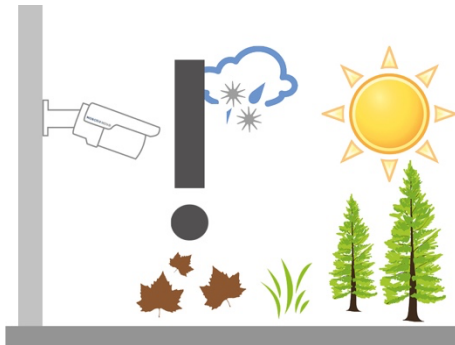
### 1.4 Video Analytic Scenery Activity

Based on the “nature” of the video Analytic algorithm, check if the algorithm is designed and suitable for “crowded” or “un-crowded” surveillance areas. In general, the detection-algorithm will generate more false conclusions, the higher the activity level (moving or detected objects) in the scenery becomes. I.e., algorithms like “abandoned Objects” may fail to detect abandoned luggage at a train platform, if the view to the object is covered by too many people moving along the platform.



## 1.5 Weather conditions

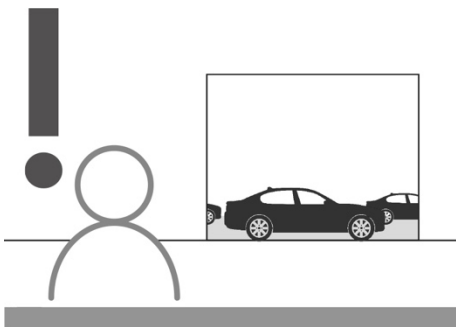
The volatility and variance of environmental conditions (sun, rain, fog, snow, wind, trees, fallen leaves, clouds, shadows, etc.) can cause false conclusion for video analytics, especially in outdoor environments. Weather as well has huge impact on video analytics in indoor environments where there exist large glass windows and doors and the mentioned conditions create changes to the scene viewed by the indoor camera.



Reducing these weather conditions impacts by suitable measures will increase the overall video signal performance and video-detection quality.

## 1.6 Scenery- / Video-Image Background

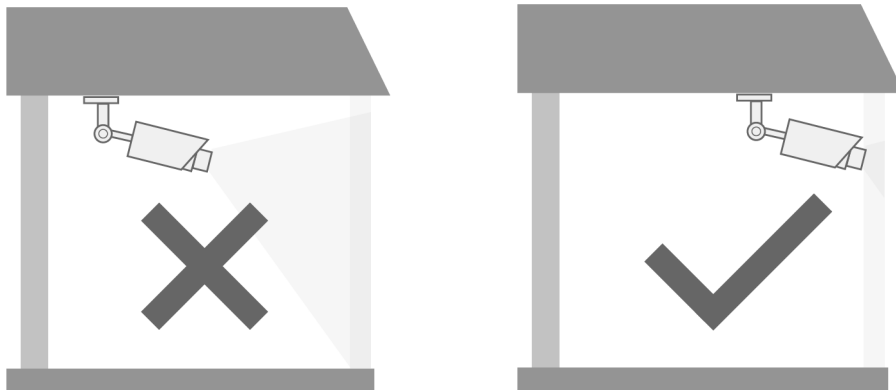
The degree of change to the background of a camera view can impact the performance of video analytics. For instance, if the view of the camera includes a constantly moving escalator, this could result in false conclusions, and needs to be considered when developing or installing.



## 2. Avoiding Reflections

### 2.1 Reflections from windows

Reflections may occur, when the outdoor view is monitored by an indoor mounted camera. Switching on WDR-Feature on camera will enhance the visibility of indoor and outdoor scenery based on difficult ambient light conditions indoor & outdoor but by nature is not capable to eliminate strong surface reflection on glass etc.

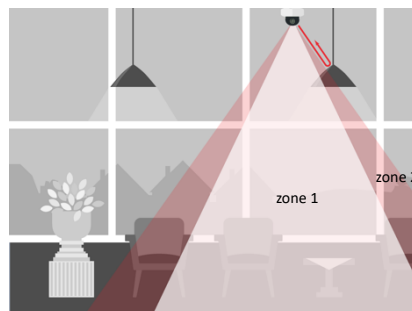


Position the camera to the window as close as possible.

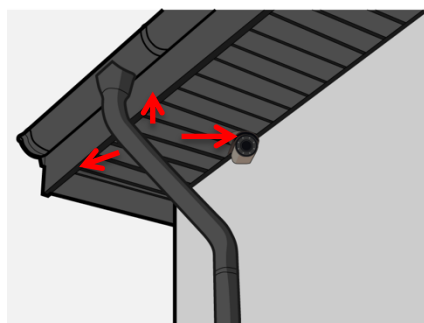
Avoid using additional Illumination (i.e. IR switch on) as this will cause reflections at window-glass.

### 2.2 Reflections from nearby objects

This situation typically occurs when the camera is installed nearby walls, ceilings, eaves, or smoke detectors that may cause infrared light reflection.



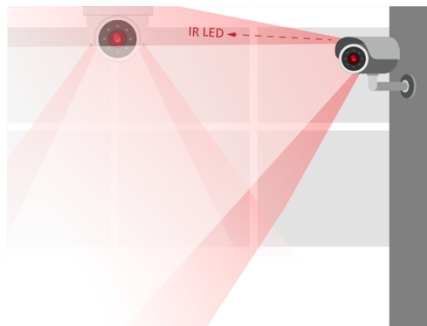
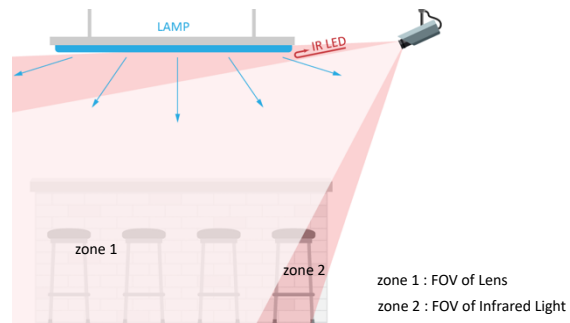
zone 1 : FOV of Lens  
zone 2 : FOV of Infrared Light



Avoid installing camera nearby objects. If the situation is unavoidable, adjust the FOV of lens and infrared light to make zone 1 and zone 2 stay clear of the object.

## 2.3 Obstruction from external light sources

This situation normally occurs when there is another camera with infrared light nearby or the camera is installed nearby a lamp.



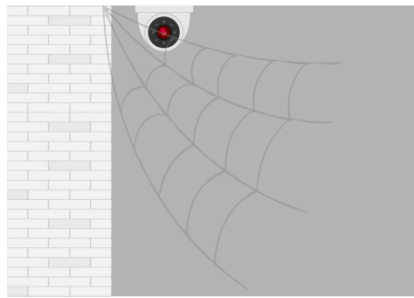
Avoid installing camera nearby another camera with infrared light or a lamp. If the situation is unavoidable, adjust the FOV of lens and infrared light to make zone 1 and zone 2 stay clear of the object.

Avoid camera installations with integrated illumination (white-light, IR, etc.) facing one to each other directly, as this will result in blurry or overexposed video pictures.



## 2.4 Other typical causes for IR Reflection / Cleaning

Dirt, dust, spider webs, waterdrops, fingerprints or scratches are also typical causes of IR reflection.



Ensure by installation, that raindrops will not occur at camera front-glass or Fix-Dome Bubble. Move the camera sunshield as far as possible to the front part to protect optical front from Rain, Snow etc. (avoid that sunshield becomes visible in the video picture).

Clean the camera regularly depending on degree of pollution to prevent dirt, dust or spider webs.

Please ensure to use the protective film while removing the cover in order to avoid fingerprints.

Avoid fingerprints on **inside and outside** the glass surfaces at optical path.

If cleaning the cover is required, use microfiber cloth and clean gently and streak-free. Use “neutral” and mild detergent.

## 2.5 Prevention of IR Leakage in camera front / bubble (IR-Leakage)

The rubber seal around the MOBOTIX MOVE Vandal Fix-Dome camera lens is to prevent from IR leakage. During installation, it is important to ensure the rubber seal around the lens is in correct position and the cover is tightened to separate the integrated IR-Illumination section from the optical lens section.

# 3 Cleaning and Maintenance

To ensure and support long lifetime and safety of installation, we recommend frequent maintenance intervals of min. once a year.

## 3.1 Cleaning of optical camera parts (front-protection glass & Fix-dome Bubble)

Due to environmental conditions and impact to camera optical parts (Bullet camera glass-front, Dome-Bubble, protective housing glass front etc..). ‘We recommend periodical cleaning to ensure 24/7 operation with reasonable good visual video quality and overall video analytics performance. For cleaning, we recommend using a soft cloth with water only (no additional detergents or alcohol).

The use of detergents or alcohol may damage the protective coating on the surface. The coatings are subject to "natural" wear and tear and are therefore not covered by the warranty.

### 3.2 Maintenance of Installation

Due to environmental impact (sunlight(UV), “acid” rain, corrosion, vibration a.s.o....) it is recommend to check mechanical installing / equipment fixation min. once a year (or more often depending on the installation environment) to ensure safe ongoing 24/7 operation of the entire system and components. Along maintenance / inspection please check the mechanical installation for mechanical stability (prevention from fall off) and check sealings and wearable parts for functionality. If applicable, please exchange wearable parts by available spare-parts.