Analytics Design Guide

Camect is a Silicon Valley company creating the simplest and most useful security solutions from ordinary camera installations in homes and businesses. Camect AI requires no calibration and can be up and running in just minutes. This guide can be used to help design your analytics system with the best detection possible. The following points can be significant causes of poor detection.

Consideration to these points should always be considered when installing a Camect AI solution.

- **Camera noise** (High noise will affect detection quality)
- **Camera blur** (Slow shutter or high levels of noise reduction are common causes at night)
- **Image quality** (Lower than HD resolution, poor focus etc will affect detection quality)
- **Scene contrast** (Poor lighting and low contrast scenes are likely to cause missed detections)
- **Maintenance** (Cleaning and removal of cobwebs, dried rain and dirt will help detection quality over time)
- **Solid fixing** (Cameras fixed to moving objects such as poles are likely to have poor detection quality)
- **Too many requirements** (Cameras with lots of requirements such as ANPR, Analytics, Facial ID etc will often not have optimal positioning. Try to have a limited number of requirements from a single camera using analytics where possible)
- **Short detection times** (1.2 seconds is needed for detection. 3 seconds of object in the scene is preferred)
- **Object too small or too big** (An object over 70% screen coverage is likely to have poor detection quality, the same for an object below 15-20 pixels per foot in the detection zone)
- **Direct light** (Flood lights, headlights and high reflective scenes can often cause missed detections)
- **Poor weather** (Heavy rain or fog can reduce detection distances)

Pixel Density Chart

Pixel density is the number of pixels in a scene at a given distance and scene width. For Camect AI to achieve accurate detections, with good contrast, an absolute minimum of 16 pixels per foot are required for accurate human detection. With sensitive mode turned on this is reduced to an absolute minimum of 11 pixels per foot. At this pixel density our false alarm rejection is over 99%.

The following tables show detection distances for 2, 4 and 8MP cameras. Actual distances will be dependent on the criteria stated in this document.

Camect AI Distances

Distances stated are maximum distances in good conditions. If areas at maximum distances are high risk, then it is recommended that additional camera coverage is added.

Camera Resolution & FOV	Distance – Sensitive Mode Off 16PPF	Distance – Sensitive Mode On 11PPF
2MP – 108 Degree (2.8mm approx)	64ft – 20mtr	93ft – 28mtr
2MP – 90 Degree (3.8mm approx)	76ft – 23mtr	111ft – 34mtr
2MP – 45 Degree (7mm approx)	153ft – 47mtr	222ft – 68mtr
2MP – 30 Degree (12mm approx)	229ft – 69mtr	333ft – 101mtr

Camera Resolution & FOV	Distance – Sensitive Mode Off 16PPF	Distance – Sensitive Mode On 11PPF
4MP – 108 Degree (2.8mm approx)	89ft – 27mtr	130ft – 40mtr
4MP – 90 Degree (3.8mm approx)	107ft – 33mtr	156ft – 48mtr
4MP – 45 Degree (7mm approx)	214ft – 65mtr	311ft – 95mtr
4MP – 30 Degree (12mm approx)	321ft – 98mtr	467ft – 143mtr

Camera Resolution & FOV	Distance – Sensitive Mode Off 16PPF	Distance – Sensitive Mode On 11PPF
8MP – 108 Degree (2.8mm approx)	127ft – 39mtr	185ft – 56mtr
8MP – 90 Degree (3.8mm approx)	153ft – 41mtr	222ft – 68mtr
8MP – 50 Degree (7mm approx)	275ft – 84mtr	400ft – 122mtr
8MP – 40 Degree (12mm approx)	344ft – 105mtr	500ft – 153mtr