# FIRE DETECTION









### Fire and Fire Risk Detection Algorithms Embedded fire detection and risk of fire software are highly accurate algorithms that can be embedded in the Sii and Accuracii line of products. Adding these algorithms turns the cameras into



The fire analytic algorithms can detect an active fire with the Active Fire Detection Algorithm as well as detect when a fire is about to occur with the High Risk of Fire Detection Algorithm so that fires can be prevented and contained with minimal or no damage to facilities.

versatile systems that can provide both safety and security of equipment and personnel.

### Key Benefits

- Fire Detection Detects fires even without smoke present at up to 6km away, day or night
- Risk of Fire Detection Detect a potential fire before it occurs or monitor equipment for thermal failure
- Multiple Alarm Types Visual, Serial Communication, and Contact Closure alarms signal an alarm state
- Versatility Can be used simultaneously for fire detection/prevention, security, and equipment monitoring
- Analog or IP Full functionality available when using either analog or IP camera systems
- Rugged Design Vumii cameras are designed to survive in extreme environments including hazardous industrial areas





# Safety

#### Active Fire Detection

The proprietary Fire Detection algorithm is able to detect and identify a nearly unlimited number fire sources while avoiding false alarms from hot spots in the scene. When Fire Detection is implemented in the Accuracii PTZ camera system, one camera could be used to monitor several preset locations and a limitless number of fire sources. When panning and tilting, the camera requires 5 seconds after each movement to detect a fire in the new scene. The Fire Detection algorithm is accurate at detection large fires at up to 6km in the longest range configuration.

- Time to Detect From 2 10 seconds dependent on application
- Number of Detected Events Nearly unlimited
- Alarm Types 3 (visual, serial or IP communication, contact closure)
- Alarm Metadata X/Y pixel coordinates of fire location

#### **Risk of Fire Detection**

The High Risk of Fire algorithm (often called Hot Spot Detection) is able to examine a scene and determine which pixels have exceeded a user-defined temperature threshold. Once set, the algorithm will show the area that exceeds the user-defined threshold as a red pixel that so that it is clearly visible in the video image. In the image at right, the coffee cup and soldering iron have exceeded the user-defined threshold of approximately 93° C (200° F). An ambient temperature adjustment, available in the configuration settings, can increase reliability in some situations.



Visual alarms for multiple fires



Hot Spot Detection set to alert >93°C (200°F)

- Time to Detect Immediate
- Number of Detected Events Unlimited
- Alarm Types 3 (visual, serial or IP communication, contact closure)



#### Fire Detection Range Performance

\*Performance Dependent on Atmospheric Conditions

# Security



#### Thermal Cameras for Security

Thermal imaging cameras are an integral part of any security system; they provide video images with very high contrast and wide area awareness day or night. This type of imaging enables threats to be detected from long ranges through fog, smoke, dust, and foliage and is immune to glare caused by bright sources such as street lamps, headlights, or flashlights.

When used in conjunction with video analytics, thermal cameras provide unmatched threat detection with very low rates of false alarms. All types of video analytics software can be used concurrently with the fire detection algorithm.

Thermal imaging cameras are complemented by daytime CCD cameras and nighttime illuminated CCD cameras that can provide additonal details about the subject.

Vumii thermal cameras use low power, are highly reliable, and integrate seamlessly into larger systems.



Fire Detection can run seamlessly with other thermal video analytics

- Wide area situational awareness
- Can be used day and night
- Long range detection capability
- Can see through light fog, rain and smoke
- Difficult to avoid detection
- Can combine with video analytics software
- No downtime, low maintenance cameras



### Security Range Performance

\*Performance Dependent on Atmospheric Conditions

### Fire Detection

#### Fire Detection is available in these camera systems:











Thermal Engine Characteristics	
Effective Pixels	17µ: 640 × 480 (NTSC / PAL)
Imager Type	Uncooled Microbolometer 7.5-14µ
NETD	< 50° mK
Video Output	RS-170 (30Hz) / CCIR (25Hz), 1.0V p-p, 75ohm

#### Applications

- Emergency Operations
- Chemical Refineries
- Oil & Gas Pipelines
- Equipment Monitoring
- Critical Infrastructure

- Wildfire Early Warning
- Refuse Yards
- Transportation Hubs
- Flame Out Monitoring

#### Application Highlights



#### Electricity Substation Monitoring

When monitoring the temperature of sensitive equipment at electrical substations the system can automaticically alert technicians if equipment is nearing its failure point. Technicians can be dispatched to repair the issue before a catastrophic power loss to the grid occurs.



#### Flame Out Monitoring

The Fire Detection algorithm can be just as useful when used with reversed functionality. In this configuration the camera will alert when the presence of a flame is missing. At on or offshore oil drilling sites, an alert of a flameout can improve site safety and avoid fines by environmental protection organizations.

\* Some countries may be subject to thermal camera export licensing requirements



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