



THERE'S MORE TO SEE WITH
MEGAPIXEL SECURITY
CAMERAS





> Intelligent Cameras



Be prepared — be vigilant — be proactive!

Lumenera's new intelligent cameras greatly enhance the ability to detect potential threats and events in real-time, providing the opportunity for security personnel to interrupt a crime or attack while in progress. Onboard video analytics heighten the effectiveness of digital video surveillance by offering automated, real-time detection, tracking and analysis of objects of interest and identification of potential threats. Lumenera camera models offer 4-32X the image detail of analog video, providing automated detection of the most intimate, pre-defined events, such as a person or vehicle entering a restricted zone, or a suspicious object left unattended in a public area.

Intelligent Camera Series

- Based on popular Le series cameras
- Built in video analytics
- Automates and enhances the ability to detect potential threats
- Reduces loss of valuable assets and potentially saves lives

How it Works

A powerful Digital Signal Processor (DSP) within each camera provides the ability to distribute intelligence throughout the surveillance network. Lumenera has partnered with ObjectVideo to extend their powerful video analytics technology onto a DSP within each Lumenera camera.



Set-up and rule creation is user-friendly and easy via the intuitive software interface. Updates, new capabilities, and features can be added to the cameras with software updates as they become available — providing for a future-proof system.

Pushing intelligence to the camera dramatically reduces overall system complexity and maintenance, as well as:

- Lowers implementation and lifecycle costs as no backroom servers are required
- Improves system performance by optimizing network bandwidth and storage
- Reduces hardware footprint to better support space-constrained environments
- Provides the ability to selectively stream network video when required



Real-time People Tracking

› Intelligent Camera Models

Targeted intelligent solutions for:

- Homeland Security
- Banking
- Retail
- Transportation
- Education

Benefits:

- Improve timeliness & decision making
- Reduce financial loss
- Take proactive action
- Fewer false alarms
- Minimize liability

Li045

- 720 x 480 resolution, 30fps
- 1/3" sensor format
- True day/night option
- 2-way audio over IP
- Enabled with ObjectVideo video analytics
- H.264 or MJPEG
- Low light - 0.5 lux
- NTSC analog out
- Ultra-wide dynamic range (120+dB)

Capabilities are endless...

- Object classification
- Object tracking
- Digital tripwire
- Directional alarms
- Enter/exit event detection
- Camera tampering
- Object appears/disappears event detection
- Accurate people/vehicle counting
- Tailgating through controlled access
- People loitering detection
- Queue length monitoring
- Unexpected crowding in critical areas
- Vehicle moving at excessive speeds
- Foreign package not removed after preset time
- Waterway monitoring for vessel size or speed





32X Resolution of VGA

> Why Megapixel

Surveillance video is often used for making critical decisions. Liability and legal action are being determined with image data that is difficult to interpret. The industry has been settling with second-rate image quality being based on analog NTSC and PAL video cameras — that is... until now!

Megapixel... The New Era In Security Video

The superior image quality of megapixel resolution represents the new era of security video. Megapixel and multi-megapixel sensors offer 4 to 32 times the image detail when compared to NTSC/PAL standards. 2600+ lines of resolution provide information-filled images with more clarity than ever seen before. Megapixel cameras are proven to provide better quality images in affording:

- new precedence for legal evidence
- more valuable source for liability and loss & prevention
- more accurate decision making, saving time while protecting human resources

Previously, with captured video being used to perform event analysis, there was little means to zoom into an image to view additional detail. Today, megapixel images provide the ability to perform 4–32X digital zoom with the additional pixel information available. Digital zoom can also be provided in live view minimizing the need for motorized optical zoom. Both are tremendous assets in analyzing security video.

Megapixel cameras help reduce camera counts. Given an equivalent level of image detail, a single multi-megapixel camera can replace several analog cameras scanning a large open area such as a traffic intersection, parking lot or storage facility. Installation and maintenance of a single camera greatly reduces overall system cost.

Superior quality video begins with high performance sensors. Progressive scan technology minimizes interlace video 'combing' effect of moving objects. CMOS sensors provide unique characteristics such as anti-blooming and selectable image cropping. Also available are CCD sensors with extreme low-light capabilities and high dynamic range.

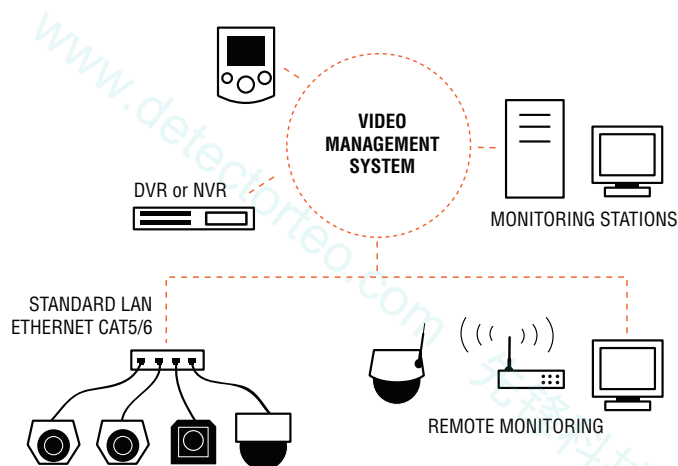
Actual images (x5 digital zoom) comparing analog versus Lumenera Le165 camera



Analog



Megapixel



Advantages of Network (IP) Video

Designed over 50 years ago, analog video standards limit resolution to 720 x 576. Incompatibility between NTSC and PAL formats are yet another issue. Network camera internet protocol (IP) provides for unlimited resolution, unlimited frame rate, and superior image quality through standard JPEG image formats.

Network devices afford system architecture for cost effective and easy system expansion. Network cabling is less expensive than coax, providing better signal integrity over long distances (CAT5–100 meters or 330', with fiber cable providing several km/mi). Digital bidirectional communication means there is no need for separate control cables for camera updates, or running peripheral devices such as PTZ, lighting, etc.

IP for Unlimited Resolution and Image Quality

Lower overall costs can be achieved with a network solution. Standard servers, switches/routers, cabling and installation are proven to be more cost efficient — particularly when adding additional cameras to an existing networked system.

With billions of IP devices connected to commercial, corporate and government LAN and WAN networks — security devices of all types are naturally migrating to this technology. Tightly integrating access control, alarm panels, communications and security video is becoming simplified with the common standards of IP.



Resolution Comparison – Megapixel to Analog

* Resolution of high-end analog cameras

> Security Camera Family

Le045

- 720 x 480 resolution
- 30 fps H.264 or MJPEG
- 1/3" sensor format
- 0.5 lux
- Color only
- True day/night option
- Ultra-wide dynamic range

Le075

- 640 x 480 resolution
- 60 fps MJPEG
- 1/3" sensor format
- 0.1 lux
- Color or monochrome
- True day/night option

Le165

- 1376 x 1032 resolution
- 15 fps MJPEG
- 2/3" sensor format
- <0.01 lux
- Color or monochrome
- True day/night option
- Unrivaled performance

Le175

- 1280 x 1024 resolution
- 30 fps MJPEG
- 1/2" sensor format
- 0.5 lux
- Color or monochrome
- True day/night option

Le259

- 1920 x 1080 resolution
- 15 fps MJPEG
- 2/3" sensor format
- 0.5 lux
- Color or monochrome
- 16:9 HD format
- SLR Canon Mount for lens control providing remote focus and iris control

Le275

- 1600 x 1200 resolution
- 20 fps MJPEG
- 1/2" sensor format
- 1 lux
- Color (only)
- True day/night option
- 2 megapixel performance

Le375

- 2048 x 1536 resolution
- 10 fps MJPEG
- 1/2" sensor format
- 1.5 lux
- Color (only)
- True day/night option
- Excellent image detail

Le11059

- 4008 x 2672 resolution
- 5 fps MJPEG
- 35mm sensor format
- 0.1 lux
- Color or monochrome
- SLR Canon Mount for lens control
- Incredible sensitivity and portrait quality images



For more information about our Megapixel Security Cameras visit:
www.lumenera.com/security/

> Lumenera Advantages

As a pioneer and leading provider of high performance security cameras, Lumenera's commitment to innovation and customer service are unparalleled. What differentiates Lumenera products is the company's expertise in digital imaging and high performance cameras. As a provider of custom and private label cameras to OEMs around the world, our products and technology are in use across thousands of transportation, security and biometric installations.

UNRIVALED IMAGE DETAIL — Better image quality is the result of additional pixels and progressive scan image sensors. Advanced digital image processing provides unrivaled color fidelity and image sharpness.

ADVANCED FEATURES — Included standard are adjustable motion detection, privacy zones, alarms, strobe synchronization, among many. Internal self healing processes, as well as on-board memory providing storage of up to 1,000 images affords reliable backup. DC-iris and RS-232 port for control of peripheral PTZ systems are also standard.

IMAGE CROPPING AND CONTROL — Minimize bandwidth and storage requirements with software selectable region of interest. Aspect ratios of 4:3 are standard, but can be modified to 16:9, 1:1 or any desired combination of video height and width.

ON-BOARD IMAGE PROCESSING — Lighting conditions present one of the greatest challenges in capturing quality images. Lumenera cameras include advanced on-board image processing to address this. Advanced algorithms, such as auto exposure control (AEC), auto white balance (AWB), auto gain (AGC), as well as DC-iris control providing intelligent self sufficient operation over wide varying lighting conditions.

CHOOSE YOUR RESOLUTION — Lumenera offers a common platform with a choice of resolution from 0.3 through 11 megapixel. The Le165 camera model is the product of choice for homeland security, military and critical surveillance applications.

ADVANCED LOW-LIGHT PERFORMANCE — Critical surveillance applications must operate in the lowest of lighting conditions. For these applications, Lumenera offers NiteBrite™ for enhanced low light performance and a true day/night option with most camera models. A mechanical sliding window provides IR-cut filter for accurate color rendition in daylight conditions — while a non-coated optical filter enhances night time performance, especially when combined with NIR illuminators. As an added benefit, all Lumenera camera sensors are uniquely sensitive to NIR lighting, with many models offering monochrome variants for X2 sensitivity versus the equivalent color sensor.

HIGH DYNAMIC RANGE — Poor image quality is often a result of contrast. Lumenera cameras use latest generation image sensors providing lower signal to noise and 10-bit image processing (30-bit color) in producing better facial and object detail as a result of high dynamic range — up to 72dB depending on the model.

FUTURE PROOF — A dedicated team of engineers are continuously developing new features to enhance the use, performance and compatibility of Lumenera network cameras. Software updates are available with simple upload to individual or multiple cameras via bulk upgrade tools.

A TECHNOLOGY PARTNER TO COUNT ON — Proven, reliable and cost effective solutions today. Software based platforms to provide cost effective upgrades (no forklift) as new capabilities are required. You can count on Lumenera as your partner with proven innovation and world class customer service.

> Camera Specifications

Model	Resolution (MJPEG)	Frame Rate	Optical Format	Sensitivity	Color / Mono	Lens Mount	Day/Night Option
Li045	720 x 480	30 fps	1/3"	0.5 lux	Color	CS*	Y
Le045	720 x 480	30 fps	1/3"	0.5 lux	Color	CS*	Y
Le075	640 x 480	60 fps	1/3"	0.1 lux	Color or Mono	CS*	Y
Le165	1376 x 1032	15 fps	2/3"	<0.01 lux	Color or Mono	CS*	Y
Le175	1280 x 1024	30 fps	1/2"	0.5 lux	Color or Mono	CS*	Y
Le259	1920 x 1080	15 fps	2/3"	0.5 lux	Color or Mono	Canon	N
Le275	1600 x 1200	20 fps	1/2"	1.0 lux	Color	CS*	Y
Le375	2048 x 1536	10 fps	1/2"	1.5 lux	Color	CS*	Y
Le11059	4008 x 2672	5 fps	35mm	0.1 lux	Color or Mono	Canon	N

* Optional C-Mount adapter available

> Camera Feature Set

- Gamma
- Contrast
- Saturation
- Brightness
- Sharpness
- Image Crop
- Privacy Map
- Time/Date
- Firmware Update
- Alarm I/O
- Min/Max JPEG File Size, Bandwidth Throttle
- Web Browser Viewer/Camera Setup
- Auto/Manual Exposure
- Auto/Manual Gain
- Continuous/Manual White Balance
- API/SDK available
- Motion Detection & Thresholds
- On-board memory buffer control
- Watchdog
- Serial Port Control
- Pre/Post Alarm Video Buffer
- Admin and User Passwords

> OEM Customization

As an OEM customer you can now leverage the success of Lumenera's line of high-performance network cameras.

Our customization options for OEMs include hardware and software modifications, as well as custom enclosures, domes, etc. in offering the following:

- Improve your time to market for network or megapixel cameras
- Reduce development costs/risks
- Differentiate from your competition

For more information contact: customsales@lumenera.com

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Design, features, and specifications are subject to change without notice.

> DVR/NVR Support

Lumenera cameras are quickly integrated into most digital or network video recorders. Support is currently provided for:

- | | |
|------------------------------|-----------------------------|
| 7 Stars | Artec Technologies |
| BroadWare Technologies | Brycen |
| CamSentry | Cieffe |
| D3Data | Dotworkz Systems |
| DVTel Inc. | Genetec |
| Imron Corporation | Initsys |
| Integral Technologies | iolmage |
| ipConfigure | IP Video |
| JDS Digital Security Systems | JVC (VR-N900U NVR) |
| Lenel Systems International | LuxRiot |
| March Networks | Milestone Systems |
| Nuuo Inc. | On-Net Surveillance Systems |
| PI Vision/Petards | SecurteX Digital |
| Silicor Technologies, Inc. | Sirrus |
| TEREO | Visual Sentry |
| Wavelet Technology | Win4Net |



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