Military Applications Presentation
SensorTec is a total security solution provider whose mission is to deliver latest technology-based solutions for the most of nowadays challenging security threats.

SensorTec is specialized in providing custom innovative solitons to Military and Law enforcement agencies. Our solutions allow end-users to gain greater flexibility, control and security of on-going field operations with an enhanced ability to proactively respond to any security threats.
Military Applications Product Line

- One inch 20 Megapixel Real-time ABF Camera
- Long/Short Range 200 Megapixel Real-time Laser Panoramic Camera
- Color Night Vision Camera
- 10km/5km Laser Speed PTZ Camera
- 40km Dual sensor Thermal/Optical PTZ Camera
- Long Range Radar PTZ Camera
- Medium Range Radar PTZ Camera
- Wireless Communications
- Command and Control System
Product-Application Recommendation

**Borders Security:**

- One inch 20 Megapixel Real-time ABF Camera
- Long/Short Range 200 Megapixel Real-time Laser Panoramic Camera
- Color Night Vision Camera
- 10km/5km Laser Speed PTZ Camera
- 40km Dual sensor Thermal/Optical PTZ Camera
- Long Range Radar PTZ Camera
- Wireless Communications
- Command and Control System
Product-Application Recommendation

- Critical Facilities Security:
  - One inch 20 Megapixel Real-time ABF Camera
  - Long/Short Range 200 Megapixel Real-time Laser Panoramic Camera
  - Color Night Vision Camera
  - 10km/5km Laser Speed PTZ Camera
  - Medium Range Radar PTZ Camera
  - Wireless Communications
  - Command and Control System
Real-time 20 MP Camera

A single camera can cover vast monitoring areas. SensorTec 20 MP has an impressive amount of pixels that take place on a 1 inch size sensor, which enables the device to deliver stunningly detailed images. Due to the sensor size and its resolution the camera can truly make a quality leap in video surveillance.

- Larger sensor brings better low-light performance, higher sensitivity and a resolution that you can meet usually in professional DSLR cameras.

- Image quality step is not the only benefit that comes with the device. It produces a 20 FPS video stream at full resolution, therefore any motion in the footage appears to be continuous.
Real-time 20 MP at night with IR Illuminator

In extreme situations when only IR lights are valuable in the aspect of monitoring, the specially developed IR flash ensures the appropriate lighting to capture clear and sharp images. The IR flash is synchronized with the camera and it flashes the monitored object at every recorded frame. The device lights the monitored object at every recorded frame with configured parameters.
Real-time 20 MP Camera VCA

A single camera covers several hundred meters in distance, and provides a resolution that is high enough for face recognition in the entire monitored area.

- Detecting zone violation and immediate alarming.
- Detecting abandoned objects.
- Detecting abnormal behaviors.
- License plate recognition in multiple lanes.
- Individually compressed frames. Image quality is independent of the picture content change.
- Special optical filter and picture enhancement algorithm for foggy, rainy weather conditions.
Real-time 20 MP Camera Specifications

- Multi-megapixel Auto Back Focus IP camera with 1” sensor and 3 optical filters for automatic Function
- IR bandpass filter for IR Flash
- Sensor Resolution 5504 (H) x 3648 (V)
- Frame rate 20 fps @ 20 MP
- Video compression JPEG2000 - Wavelet
- MPX24 Signal Processor
- Image sensor 1” color 20 Megapixel CMOS
- Motorized back focus adjustment
Real-time 20 MP Camera Specifications

- Progressive, no interlaced scanning
- Shutter type Electronic rolling shutter (ERS)
- 0.02 lux F1.4 Day mode or 0.002 lux F1.4 Night mode
- Gain control Fix, auto, blur or noise priority
- Backlight compensation Whole picture or any area selectable
- Standard C mount DC auto/manual IRIS, P-IRIS lens
- 4 programmable IO connections NO, NC / OC 0.5A/30V
- Built-in microphone, 1 ch external 24 kHz/16bit, sound in/output
- Integrated motion detection
- Ethernet connection 1 Gbit / Low Voltage Power over Ethernet (LPoE)
Water Cooled Housing

* The solid construction of this housing makes it suitable for heavy duty applications,

* The housing is entirely constructed from electro polished stainless steel and consists of a body with a double chamber for the circulation of a cooling liquid or air.

* It is equipped with tempered glass for higher temperature.
Bullet Proof Housing

The unit is a bullet-resistant environmental camera housing featuring a 7-gauge steel body and is designed to meet or exceed Level III protection per UL standard 752. An integrated tilt bracket protects all wiring and allows for surface mount applications, plus an innovative camera sled allows the camera to be rotated 360° within the housing to allow for any mount position.
200 MP Panoramic Camera

The exclusive flagship camera of SensorTec is able to cover immense areas with extraordinary resolution from a single viewpoint. The device produces 200 megapixel images wherein every detail is clearly visible in all light conditions.
200 MP Panoramic Camera  Description

• SensorTec 180° Panorama Camera 200 MP provides high speed, 20 FPS frame rate at full resolution. It consists of ten specially constructed LOGIPIX ONE 20 MP cameras, that are located in a uniquely designed, industrial camera house.

• The panorama camera provides all the benefits that comes with the high-end large format sensors, namely extra wide dynamic range, improved low-light performance and high sensitivity. Large panoramic images ensure an expanded view. Operators can continuously observe the whole monitored area at once without redundant or hidden areas. The realistic character of the images combined with huge resolution ensures a quality that is suitable for face recognition even from great distances.
200 MP Panoramic Camera  
Description
Specifications

- Resolution: 55040(H) x 3648(V)
- Effective resolution: 50167(H) x 3648(V)
- Frame rate: 20 fps at 200 MP
- Operating modes: Day / Night - synchronized change on all cameras
- Video compression: JPEG2000 - Wavelet (MPX24 Signal Processor)
- Image sensor: 10 pcs of 1-inch color 20 Megapixel CMOS
- Scanning system: Progressive, no interlaced scanning
- Sensitivity: 0.02 lux F1.4 Day mode or 0.002 lux F1.4 Night mode (Without Laser IR Illuminator)
- Gain control: Fix, auto, blur or noise priority
- Backlight compensation: Whole picture or any area selectable
200 MP Panoramic Camera Description
Specifications

• Angle of view: 180°(H) x 14.2°(V)
• In/outputs: External IR illuminator control (synchronized with Day/Night change), 2 programmable in- or outputs
• Sound in/output (Optional): 1ch external 24 kHz / 16bit
• Intelligence: Integrated motion detection
• Ethernet: 10Gbps SFP+ socket
• Protection classification: IP66
• Cooling system: Passive heat-pipe, Active fans and peltier
• Heating system: Active automatic
• Cleaning system: Wiper with washer fluid pump and 5l internal tank
200 MP Panoramic Camera Description Sample image
200 MP Panoramic Camera  Description Sample image
The following are Panoramic Camera Sample Videos
5km Long Range Speed PTZ Camera

Long Range 5Km (Day & Night).
Determines target's GPS coordinates and shows it on a map.
6 Megapixel Long Range Speed PTZ Camera Features

The new PTZ comes with numerous benefits. A 1” sensor is placed in the device that provides wide dynamic range images with full HD resolution. The PTZ camera produces 25 FPS video stream at all resolutions. It has a long range 11.9 mm – 357 mm lens with 30x optical zoom. The PTZ is equipped with a varifocal IR Laser illuminator that works together with the camera’s optical zoom system, and is able to efficiently illuminate targets even at great distances.

As a result of these features the SensorTec Long Range PTZ camera is able to ensure human detection even from a 5km distance, no matter if it is day or night.
6 Megapixel Long Range Speed PTZ Camera Features

The PTZ can be strategically installed out of sight at an undetectable location, far away from the observed area. This helps to prevent any intentional damage to the camera.

The SensorTec Long Range PTZ camera can be an essential device in critical infrastructure surveillance, border control and airport surveillance. Owing to the high accuracy and fast positioning of the camera, operators can easily track the movements of the targets no matter how far they are.

The Long Range PTZ camera can be automatically directed to a certain GPS coordinates which could be fed to the camera using a detection radar or a panic device or clicking on a location map.
10 Km Long Range Laser camera

- Completely custom built to meet your exact requirements. Options include, but are not limited to, cooled and uncooled thermal cameras, megapixel cameras, ultra long-range lenses, radar integration, zoom laser IR diode (up to 5km in complete darkness), gyro stabilization, and more.
- Delivers long range day/night surveillance.
- Powerful 16.7-2000mm motorized zoom lens can detect intruders at distances of up to 10km at daytime.
- The high-output, NIR Laser IR illuminator provides detection for up to 5km in complete darkness.
- Unparalleled video surveillance and situation assessment for perimeter protection and border defense.
10 Km Long Range Laser camera

Zoom Laser IR Diode
For applications that get complete darkness due to cover or other environmental applications, Ascendent has developed its Zoom Laser IR Diode (ZLID) illuminators. ZLID Technology synchronizes IR intensity and area illumination with a motorized zoom lens for outstanding performance, eliminating overexposure, washout, and hot-spots for distances up to 5km (16,400ft) in complete darkness.
Rugged. Robust. Reliable.
It is built to handle the most severe weather conditions, from scorching sun to sub-zero temperatures; our integrated heater/blower keeps the components at a consistent temperature. The body has built-in cooling fins, and a rugged military connector, to ensure smooth operation in mission critical applications.
10 Km Long Range Laser camera Specifications

- Detection range 10km day, 5km night
- 1/1.8" 0.0002lux low illumination color to B/W CMOS , 50Hz: 25fps (1920 × 1080) 60Hz: 30fps (1920 × 1080), Auto ICR switch, 3rd level DNR denoise
- Laser 40W, 808nm NIR Laser
- SS digital stepper illumination angle control, unique laser angle and distance matching technology, min 0.1° follow-up zooming
- Lens 16.7~2000mm, IR correction, motorized zoom and focus, auto iris
- Fog penetration
- Pan: 360° continuous; Tilt: +45° ~ -45°
SensorTec color night vision reconnaissance camera LLL (Low Light Level) true Color night vision VIS-NIR sensor is a technological breakthrough in night vision technology. High performance, low noise, high sensitivity & an incredible 5000000 equivalent ISO rating are just a few features offered by the system.

The SWaP sensor can be integrated into night vision sights, scopes, monoculars, binoculars, drivers aid, UAV, UAS, unmanned and a wide array of defense, homeland security, border, ground, mobile, marine, airborne, military, wildlife, documentary, specialty combat, security and surveillance applications.
SensorTec Color night vision sensor will revolutionize military imaging systems and assist military commanders and war fighters in night time operations in hand held, mobile, marine and airborne platforms, the 10 megapixel HD low light color sensor will offer a distinct advantage over all currently existing night vision military technologies. The Solid-state color low light night vision sensor utilizes specialty video processing on chip and on the filters, as well as advanced electronic vis-NIR image enhancement algorithms that allow it to collect an incredible amount of light, and retain full sensitivity without loss of a brilliant color image, furthermore the camera’s BSTFA (Broad Spectrum Thin Film Array) high fidelity, large pixel pitch sensor architecture achieves incredible bright as day, true color imagery at real time full tv frame rates, without image lag and minimal image noise or grain.
The following are Color Night Vision Camera Sample Videos at Night Time
Color Night Vision Camera
Specifications

Sensor & Parameters: Maintenance free, no moving parts, Solid State non intensified BSTFA Extreme low light color FPA w/column amplification
- Large Format, large pixel pitch architecture w/5,000,000 equivalent ISO
- Backside Illuminated for light utilization efficiency
- Extremely High Dynamic Range, Photoconductive & photoresponse gain
- Very high ISO w/Extremely Low read Noise
- Auto Black Level Calibration
- Auto Exposure w/excellent color fidelity
- Excellent image uniformity
- Auto hot pixel correction
- Frame Rate: 60 FPS / optional 120 FPS
- Day Night Mode: Auto Imaging/Auto Switching
- Bright light/Blooming compensation: Automatic
Color Night Vision Camera Specifications

Photodetector Array Size: 10 Megapixel / HD 4320 x 2432
- Temperature Range: -30°C to +80°C
- Output: HD
- Output Type: HD-SDI / HDMI
- Wavelength: 390-1220 Um broadband Extreme High Sensitivity
- IR Response: Yes
- Power: 12V
- Lens: 32 mm Standard (included) / 22mm, 37mm, 60mm, 88mm, 152mm ~ smaller and Larger mixed Aperture Focal Lengths in development
- Housing: Sealed / All weather
- Image Stabilization: Optional 3 stage
40km Long Range Multi-Sensor Camera (Hawk)  
Military Grade PTZ Camera System

The Hawk is a revolutionary multi sensor PTZ camera boasting
a long-range 128X visible day/night camera, long-range 40+km
thermal infrared zoom, and optional ZLID NIR illumination with LRF.
This multi-sensory payload enables the Hawk to provide high resolution
imaging in virtually any environment from heavy fog to complete darkness.

Designed for weapons systems pointing and accuracy, it meets and exceeds
MIL-STD-810F military ratings for shock, vibration, temperature and
dust/water ingression.

This makes it the ultimate long range camera system for 24/7 situational
awareness and long-range recognition and identification of targets.
40km Long Range Multi-Sensor Camera (Hawk)

Military Grade PTZ Camera System

The Hoak's visible camera was designed and optimized for long range surveillance. It uses a 1/2.8" progressive scan CMOS sensor with an HD resolution of 1920×1080 and a fantastic signal to noise ratio of 55dB. The 1/2.8" sensor has excellent spectral sensitivity for both visible and NIR wavelengths and features an automatic IR cut filter, making it a true day/night camera providing clear color images by day and black and white images at night. The 1/2.8" sensor provides the best balance between light sensitivity and maximum zoom, making it particularly suited for long range surveillance.
40km Long Range Multi-Sensor Camera (Hawk)

Military Grade PTZ Camera System

The Hawk is a Mid-Wave Infrared (MWIR) thermal camera which means it operates on 3,000nm–5,000nm wavelengths where terrestrial temperature targets emit most of their infrared energy. Using the built-in Digital Detail Enhancement (DDE) for increased contrast and image clarity, this system is capable of detecting vehicles up to 45km away.* While thermal is a significant investment, its superior range and performance allows it to replace and outperform all other solutions, making it a viable option for many applications.
40km Long Range Multi-Sensor Camera (Hawk)

Military Grade PTZ Camera System

The Hawk has a weapons systems grade positioner designed for military applications and is able to withstand shock and vibration for use on tanks and navy vessels.

The pan tilt implements an Elliptical Synchronous Drive for high torque to handle large payloads while providing micro steps as precise as 0.00025° for smooth manual control or automatic slew to cue tracking when used with Video Analytics, VTMS systems, Radar, AIS and weapon systems.

The integrated multi-axis gyro stabilization uses a high-rate MEMS gyro in combination with the pan/tilt to mechanically stabilize the payload, reducing the effects of vibration, oscillation, pitch and roll for unparalleled stabilization on tanks, Humvees, assault vehicles and more.
40km Long Range Multi-Sensor Camera (Hawk)

Specifications

- Turn-key long-range military grade multi-sensor surveillance system
- Tri-Sensor payload: HD visible, ZLID illumination & thermal
- Day/Night 1080p HD IP ONVIF 1/2.8" or 1/1.8" CMOS sensor
- 16-2050mm Zoom Lens (with motorized 2x doubler)
- 128X zoom range for an incredible 19°–0.15° field of view
- Auto focus & motorized fog/parasitic light filter
- Image enhancements: DWDR, HLC, ROI, EIS, 3DNR, Fog/Haze
- Color: 0.06 Lux; B&W: 0.005 Lux (0 Lux with IR ZLID)
- ZLID IR Laser for 5 km of illumination that syncs with zoom
- 640×480 15µm, 30Hz real-time InSb cooled thermal imager
40km Long Range Multi-Sensor Camera (Hawk)

Specifications

- 35–715mm auto-focus germanium thermal lens
- Cooled thermal sensor provides extremely sharp thermal imagery
- Up to 27km of human detection and 45km of vehicle detection with DDE
- Rugged -40°—+60°C and IP67 sealed with anti-corrosion finish
- Elliptical Synchronous Drive pan tilt for unparalleled mobile positioning
- Endless 360° rotation with speeds up to 70°/s and 0.00025° resolution
- State of the art 2-axis gyro stabilization & EIS DSP image stabilization
- Meets and exceeds MIL-STD-810F for shock and vibration
- EMI MIL-STD-461E for electromagnetic interference
E-Scan Ground Surveillance Radar PTZ Camera

Long-range ground surveillance radar Camera suited to fixed, mobile and portable applications

- SensorTec’s E-Scan Ground Surveillance E-Scan Radar Camera is latest generation of e-scan ground surveillance radars (GSR). SensorTec’s radars have no moving parts to wear out, maintain or replace and offer dramatic improvements in reliability over mechanically scanned radars. SensorTec radars are all-in-one fully integrated units comprising antennas, signal processing, plot extractor, GPS and compass. Angular coverage is provided in modular units of 90°. SensorTec radars are proven to withstand harsh environmental conditions and provide many years of maintenance free operation. The radar operates in all weather conditions and includes a built-in precipitation filter that suppresses false detections from rain or snow. Day/night 24-hour operation is fully supported.
E-Scan Ground Surveillance Radar PTZ Camera

• SensorTec E-Scan Ground Surveillance Radar, can be equipped with either SensorTec’s 10KM, 5Km, 45Km PTZ cameras or SensorTec’s Color Night Vision Camera.
• SensorTec radars are all-in-one fully integrated units comprising camera, Lens, PT Head, antennas, signal processing, plot extractor, GPS and compass.
• SensorTec radar camera are proven to withstand harsh environmental conditions and provide many years of maintenance free operation.
E-Scan Ground Surveillance Radar PTZ Camera

SensorTec radar camera are part of a range of advanced technologies that provide class-leading protection against conventional and asymmetric/terrorist threats.
In today's surveillance Market most of the systems are reactive rather than proactive.

SensorTec Radar Camera system is a solution that enable very early alarm for a prospect security violation, hence it gives the user enough time to respond to the prospect security threat.
The radar camera system is designed to detect a target for a distance of 15 to 30 Km from the installation point, with 360 degree coverage angle.

It provide decision makers with ongoing “situation understanding”
3D Illustration for Radar Camera

- 5, 10, 45 Km Long Range
- PTZ Camera or Color Night Vision Radar camera
- 15 to 30 Km Long Range E-Scan Radar
20 MP and Electric Fence

20 MP Camera

Electric Fence
20 Megapixel camera on electric fence

- Housing with Water Cooling or Bullet Proof
- Wiper
- Infrared illumination
Radar Operation

The radar scans and detects moving vehicles and persons (including 'crawlers') over a wide area and provides exceptional detection performance out to 30 km.

- Detects moving vehicles and persons
- Electronic-scanning (E-Scan)
- Low-power FMCW Doppler Technology
- Wide Elevation beam
- Unsurpassed ground clutter suppression
- Low false alarm rate
Radar Software provides users with a simple interface to control and view one or more radars.

- Simple, intuitive display and control of one or more radars.
- Microsoft Windows based
- MapLink Pro mapping
- User definable alert and exclusion zones
- Automatic slew-to-cue of Pan/Tilt camera systems
- Automatic selection of background maps
- Continuous record and playback facility for post-event analysis
WiMAX and Microwave Solution
for full Real-time video streaming applications.

SensorTec Wireless’s solutions can cope with outdoor video surveillance systems located in the harshest of climates and in the remotest locations, while our QoS means that it is easy to prioritize voice, data or video traffic on a network. Our vast experience includes equipment installations for safe city projects, high-profile sporting events and military applications. We offer a comprehensive range of point-to-point and point-to-multipoint products with unmatched coverage and throughputs to provide ultimate peace of mind.
WiMAX and Microwave Solution
for full Real-time video streaming applications.

- Up to 3 Gbps Data Rate for backhauling links using Millimeter wave Microwave links
- Up to 1000 Mbps Data Rate for bandwidth hungry applications (WiMAX).
- 2x2 MIMO OFDM Radio Technology
- High radio output power (400mW, 28 dBm) - extended coverage.
- Optimizable for video surveillance systems.
- Unsurpassed Robustness and Reliability.
- Gigabit Ethernet Ports.
- Sophisticated automatic modulation and Tx power control algorithms
- Spectrum analysis tool supporting multiple modes for in-depth review
- High-gain integrated antenna units suitable for 50+ km hops
- Wide Frequency range from 3.4 to 3.7 GHz, and 4.9 to 6.4 GHz.
Protection against moisture and dust

Up to 500 Mbps at distances up to 100 km

24/365
Continuous operation 24 hours a day, 365 days a year

Working in the harshest conditions

+60°C

-55°C
Command & Control System

Including Software and Hardware Equipment.
NVR-based VCA System Features

Quickly and accurately detect and track humans, vehicles and boats or other specified objects in visible or IR video.

- Neatly avoid the many problems suffered by motion-based detection systems. For example, non-object (e.g. bird, animal, vehicle, tree, plant etc.) motion, vibration of fixed cameras and changing light conditions have no effect.
VCA System inside NVR Features

Assessment, change of scene (e.g. added or missing item) alarm, object height, width, Position and velocity estimation etc..
VCA System inside NVR Features

Can locate different object types simultaneously using a single image frame. Similarly, stationary objects embedded in a stationary background can be detected.

- **Behaviour**: two people exit vehicle (airborne IR camera)
- **Behavior**: two people approach car
- **Object**: boat
- **Object**: seven people
Fence Video Analytic

Video Content Analysis based application that detects all perimeter intrusions within a monitored area. The application recognizes the moving objects and if they are in a proper size and crosses a configured virtual line the system generates an automatic alarm.

The intelligent detection and deterrence capabilities makes this solution an effective security protection system for commercial and industrial properties.
Video Management System

5000 Megapixel VMS

REAL TIME MONITORING OF ALL CAMERAS
Digital Video Recorder

- Built-in 16-channel LPoE Router
- Built-in UPS
- 3600 MBit/sec recording speed
- Up to 20 hot-swap SATA HDDs
- Up to 160 TByte storage capacity
- VRM Fail-safe File system
- Network Video Recorder specially designed for NVR cameras
- Built-in LPoE Router for easy system installation
- Central Monitoring for remote management
- Video compression - JPEG2000 ideal for multi-megapixel cameras
Video Management System

A video management client that grants the user full control of network video recorders. The client consists of several Client-Server architecture based software modules that enable the user to access and use all Mega Pixel CCTV system features and functions.
VMS Features

- Archive, video playback and download
- E-Map feature with interactive Cameras, Input/Outputs and Alarms representation on the map
- Video Analytics optional feature on all connected cameras
- User customized camera profiles to display multi cameras on one screen up to 64 cameras
- Multiple video clients for parallel monitoring
- Event-triggered video playback
- Onscreen event tracking
- Virtual on-screen PTZ controller
- Two ways audio communication over IP
- Video search: Date, Time, motion, alarm, smart search
Client Workstation

- It consists of a computer loaded with required software for controlling the monitoring system including all its functions: live monitoring, displaying & recording. Station is equipped by keyboard, joy stick to ease dealing with the system.