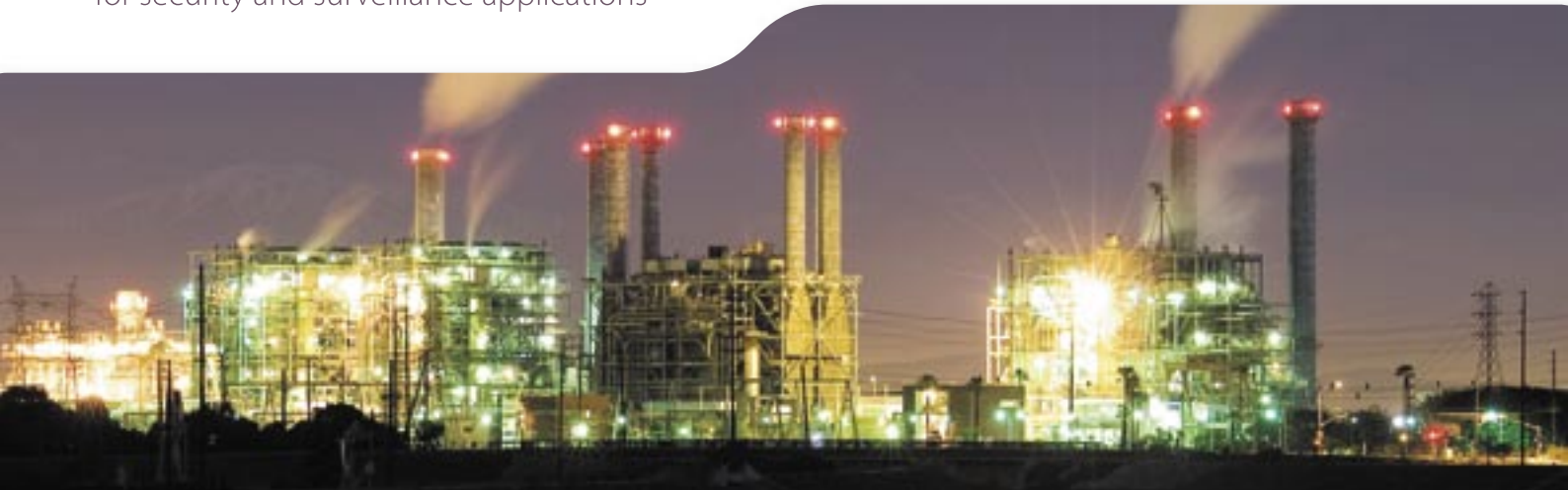


Thermal imaging cameras  
for security and surveillance applications



## Sentry II | Sentinel

Multi-sensor thermal imaging cameras for  
24-hour perimeter surveillance



Sentinel



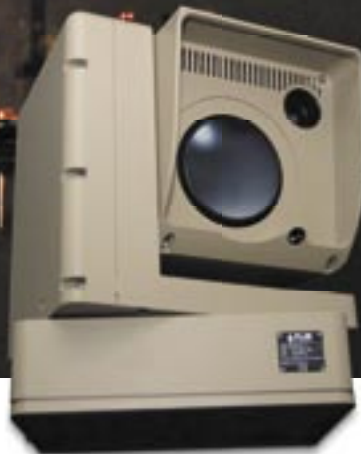
Sentry II



# Sentry II and Sentinel: from FLIR Systems, the world leader for thermal imaging systems



Sentinel



Sentry II

The Sentry II and Sentinel offer a dual field of view long wave sensor for fast situational awareness and long range thermal imaging. Both have a 20° wide, and 5° narrow field of view lens incorporated. This dual view optics can detect a man size target at a distance of more than 2 kilometers away. The cameras can be integrated into existing networks or used portable. Both include a daylight/lowlight TV sensor with 18x optical zoom, making it a versatile 24/7 surveillance systems. The Sentinel is a fixed mounted thermal imaging system whereas the Sentry II is mounted on a rugged Pan/Tilt system.

Both systems include FLIR's advanced image processing techniques which deliver excellent contrast regardless of scene dynamics.

## **Crisp thermal images - 320 x 240 pixels**

The Sentry II and Sentinel provide crisp, clear thermal imaging, 320 x 240 pixels. This allows the user to see more detail and detect more and smaller objects from a far distance. Advanced internal camera software delivers a crisp image without the need for user adjustments. They provide high quality thermal imaging in any night- or daytime environmental conditions.

## **Dual field of view optics**

Both the Sentry II and Sentinel are equipped with dual field of view optics. One is a 35 mm wide angle lens (20° field of view), the other is a 140 mm narrow 5° field of view lens.

Both systems have the capability to switch from one lens to another within a fraction of a second. The 35 mm lens will give you excellent situational awareness. When a potential threat is detected you can easily switch to the 140 mm lens to have a closer look at the situation. This way operators can see further, recognize more detail and react more quickly to security threats.

## **Autofocus**

The Sentry II and Sentinel contain an exclusive auto focus feature which delivers crisp, clear images at the press of a button or whenever fields of view are changed. The system allows you to experience better situational awareness in the wide field of view, while maintaining detailed recognition capabilities in the narrow field of view.





### Electronic zoom

A 4:1 continuous digital electronic zoom provides for another level of magnification and fine-tuning for target discrimination purposes. Advanced image processing provides sharp thermal imagery regardless of scene dynamics.

### Powerful daylight imaging camera

The Sentry II and Sentinel feature a powerful, sensitive daylight camera with excellent zoom (up to 18x continuous optical zoom) and color quality.

### Easy and fast installation

Both cameras incorporate easily with common power and video interfaces found in existing and new security systems. They can be easily integrated into any existing CCTV infrastructure providing early detection and visibility 24/7 all year round. The images from the 320 x 240 pixel detector can be displayed on virtually any existing display that accepts composite video.

### Portable and rugged

Both systems are configured to be field transportable for fast deployment.

### Designed for use in harsh environments

The Sentry II and Sentinel are extremely rugged systems. Their vital core is well protected, Mil-Std-810E and IP65 rated, against humidity and water. A sealed lens maintains the environmental ratings of the existing enclosure. They all operate between -32°C and +55°C.

### Multiple installation options

Various options exist to connect the Sentry II and Sentinel and integrate them in your existing systems. The Sentry II and Sentinel can be configured for stand alone use, as part of a network or in a hybrid configuration with local and network based control:

#### - Analog configuration:

Simply connect the Sentry II and Sentinel over RS-232 or RS-422 to the remote control panel. A video cable can be connected to any existing display that accepts composite video.

#### - TCP/IP configuration:

the Sentry II and Sentinel can be integrated in any existing TCP/IP network and controlled over a PC. Streaming digital video (MPEG 2 or 4) is fed directly from the camera. No need to put extra cables. Using this configuration, you can monitor all activity in a protected area over the internet. Even when you are thousands of kilometers away.



All connectors are conveniently placed at the back of the Sentry II

### Sentry II specific:

#### Easy-to-use, fast, precision "Pan/Tilt"

The Sentry II is mounted on a rugged Pan/Tilt system. Intuitive joystick operation allows the operator to see 360° horizontal and -35° to +60° vertically, offering superb situational awareness. A stowed position capability encloses the lens and protects sensitive optics when the camera is not being used.

#### Radar Connection – "Slew to cue"

The Sentry II can be connected to a radar system. If the radar detects an object, the Sentry II will automatically turn in the right direction and give you a visual image so that you can instantly see what the blip on the radar screen really means.

Thanks to its precision, fast Pan/Tilt system, the Sentry II slews at up to 120° / sec. This means that within 1 second the head of the Sentry II will turn 120°. It allows for easy tracking and following of fast moving objects.



### Sentry II and Sentinel: the perfect tools for security and surveillance applications

In complete darkness, in the most diverse weather conditions, the Sentry II and Sentinel create a virtual security fence and are finding their way into many security and surveillance applications.

Nuclear plants, petrochemical installations, warehouses, ports and airports, ... they all are vulnerable to theft, or even worse terrorist attacks, and can be protected by using thermal imaging cameras like the Sentry II and Sentinel.

Terrorism, vandalism, and random violence threaten the safety of personnel and the integrity of public and private facilities. A comprehensive security program utilizing thermal imaging cameras like the Sentry II and Sentinel is the key to asset protection and risk mitigation. The Sentry II and Sentinel expose threats hidden in the darkness, concealed by adverse weather, and veiled by obscurants like dust, fog, and smoke.

The Sentry II and Sentinel are new weapons for intrusion detection. They detect intruders sooner, provide more time to react and protect people, assets, and infrastructures. They are operational 24 hours a day even in the darkest of nights, light fog, snow, smoke, ...

#### Protect your assets in broad daylight

The Sentry II and Sentinel will not only protect your assets against intruders during the darkest of nights. They are also perfectly suited to complement your existing cameras during daytime. The Sentry II and Sentinel will detect objects that remain invisible for the naked eye. They are not affected by glare from the sun. The Sentry II and Sentinel will allow you to see through the glare, and detect possible intruders. Also people hiding in the shadows or in bushes, will be seamlessly detected by the Sentry II and Sentinel.

# Sentry II and Sentinel



## Technical specifications

### IMAGING PERFORMANCE

#### Thermal:

Detector type  
Spectral range  
Number of fields of view  
Field of view lens 1

Field of view lens 2

#### Spatial resolution (IFOV)

Thermal sensitivity  
Image frequency  
Focus  
Electronic zoom  
Image processing  
Visual:  
Built-in digital video

Effective pixels  
Standard lens performance  
Optical zoom  
Electronic zoom

### Sentry II / Sentinel

Focal Plane Array (FPA), uncooled microbolometer 320 x 240 pixels  
7.5 to 13µm  
2  
20° (H) x 15° (V) with 35 mm lens (NTSC)  
20° (H) x 16° (V) with 35 mm lens (PAL)  
5° (H) x 3.75° (V) with 140 mm lens (NTSC)  
5° (H) x 4.0° (V) with 140 mm lens (PAL)  
1.1 mrad (35 mm lens) - 0.3 mrad (140 mm lens)  
65 mK max  
30 Hz (NTSC), 25 Hz (PAL)  
Automatic or Manual  
1x to 4x continuous  
Digital Detail Enhancement (DDE), Histogram Equalization (HEQ)  
Sony FCB-EX480C Color block camera (NTSC)  
Sony FCB-EX480CP Color block camera (PAL)  
Approx. 380,000 pixels NTSC - approx. 440,000 pixels PAL  
18x zoom, f=4.1 mm (wide) to 73.8 mm (tele), F 1.4 to F 3.0  
18x, 48° to 2.7° continuous  
12x continuous

### PAN - TILT: Sentry II only

Az Range; Az velocity  
El Range; El velocity  
Slew Rate  
Accuracy  
Resolution  
Parking position

n x 360°  
-35° to +60°  
Pan 0-120° / second  
± 3 mrad  
± 0.1 mrad  
yes

### SYSTEM FEATURES

Remote Control  
Automatic heater

On/Off power save feature  
Automatic interior heaters and defrosters support arctic climate use  
Sentry II only: optional exterior heaters with separate power supply support extreme arctic climate use  
Intelligent self diagnostics tests vital functions  
Sentry II only: Program multiple preset scene locations  
Supports Pelco D communication protocol

#### Built-in Test (BIT)

Programmable search  
Pelco D compliance

### IMAGE PRESENTATION

Video output  
Connector types

NTSC or PAL composite video  
Sentry II: BNC (2) provides thermal and daylight video simultaneously  
Sentinel: Mil 38999 system connector on sensor unit. BNC (2), RS-232 at break-out box  
Sentry II: optional embedded server provides simultaneous IR + TV  
MPEG-2 or MPEG-4 video  
Sentinel: requires optional server  
Sentry II only: MPEG-2 or MPEG-4

VOIP

MPEG video

### POWER

Requirements  
Consumption

18-32 V DC  
Sentry II: 31 W typical, without heaters - 100 W at 28 V DC, with interior heaters, 280 W at 28 V DC with exterior heaters  
Sentinel: 12 W typical without heaters - 150 W at 28 V DC with heaters

### ENVIRONMENTAL SPECIFICATION

Operating temperature range  
Storage temperature range  
Automatic Window defrost  
Humidity  
Sand/dust, vibraton, icing  
Encapsulation  
Shock  
Vibration

-32°C to +55°C, Mil-Std 810 F, 502.4 Procedure II  
-40°C to +70°C, Mil-Std 810 F, 502.4 Procedure I  
Yes  
Mil-Std 810 F, 507.4  
Mil-Std 810 F  
IP65  
Mil-Std 810 F, 516.5 Procedure I, saw tooth, 20g, 11 ms, 3 x 6 shocks  
Mil-Std 810 F, 514.5 Procedure VIII, sinus 10mm/1.5 g, 5-80-5 Hz, 3 x 100 min

### PHYSICAL CHARACTERISTICS

#### Sentry II

Camera Weight  
Camera Size (L x W x H)  
Shipping weight (camera + packaging)  
Shipping size (camera + packaging) (L x W x H)

21 kg  
397 x 300 x 226 mm  
32 kg in Sentry II transport case  
760 mm x 400 mm x 480 mm

#### Sentinel

Camera Weight  
Camera Size  
Shipping weight (camera + packaging)  
Shipping size (camera + packaging) (L x W x H)

6.7 kg  
254 x 220 x 320 mm  
14.0 kg  
600 mm x 500 mm x 530 mm

### INTERFACES

TCP/IP

Sentry II only: optional: command and control: all functions and MPEG videos  
Command and control: all functions  
Sentry II only: command and control: all functions

RS-232  
RS-485

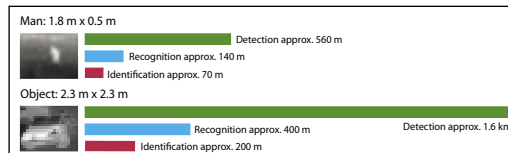
### STANDARD PACKAGES

**Sentry II standard package:** Sentry II with CCD and PTH assy, Joystick control unit with cable, system cable 15 m, power supply with cable, junction box, video cable, host cable, transport case, operator manual  
**Sentry II IP package:** Sentry II with CCD and PTH assy, IP option, battery power cable, ethernet cable 30 m  
**Sentinel:** depending on user requirements

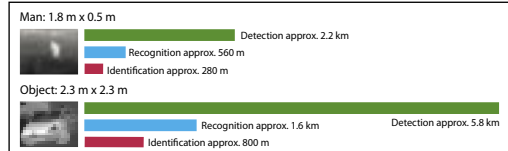
SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

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### Sentry II / Sentinel: range performance 35 mm lens



### Sentry II / Sentinel: range performance 140 mm lens



Actual range may vary depending on camera set-up, environmental conditions, user experience and type of monitor or display used.

#### Assumptions:

50 % probability of achieving objective at specified distance given 2°C temperature difference and 0.85 / km atmospheric attenuation factor.

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