

## Thermal Imaging Cameras for Marine/Offshore Oil Production

*See the unseen!* Aspect Technology's Thermal Sentinel is the ultimate thermal vision advantage for marine/offshore oil production applications. **Thermal Sentinel** is an uncooled 7-14µm camera with 320x240 pixel resolution. Thermal Sentinel uses proven Amorphous Silicon Microbolometer detectors with state-of-the-art thermal sensitivity and dynamic range imaging technology. Rated as the Best-In-Class Image Quality due to Advanced Histogram-Based Image Processing producing 640 x 480 quality thermal imaging video output. The Thermal Sentinel System is designed for rough and demanding operation. It delivers high performance digitally processed imagery in a lightweight rugged weather and corrosion protective enclosure, guaranteeing the best target detection and clearest image of objects in total darkness and in all types of weather conditions. Whether the application is military, security, surveillance, oil spill detection, mining or search and rescue, Thermal Sentinel offers a distinct advantage that no other type camera can provide. Its metal housing offers reliable weather protection and corrosion resistance and its bright 8.0 inch LCD display with remote control offers 307,200 pixel resolution. Thermal Sentinel combines impressive performance with Aspect Technology's reliability and ease of use, making it one of the most effective thermal imaging cameras currently available. Its time proven uncooled detector technology offers thousands of hours of maintenance free operation.

### PETROCHEMICAL APPLICATIONS

Thermal Sentinel provides the oil production industry the capability to see oil on water in total darkness. Oil leak detection and oil containment becomes an easier task with the Thermal Sentinel's detection capability. The Thermal Sentinel is enclosed in a NEMA 4X enclosure to withstand the harsh marine and oil production environment.



Monitor smoke stacks and flame petrochemical burn-off stacks 24/7 in all weather conditions. Thermal Sentinel can pierce through all types of obscurants such as mist, fog, rain, smoke and dust to provide better surveillance than any other type camera.



Monitor critical processes including oil supply lines 24/7. The variable speed Pan/tilt is a proven outdoor unit constructed of a die-cast aluminum with "O" ring seals and epoxy powder coating. Its corrosion resistant motors provide many years of reliable service in harsh environment.



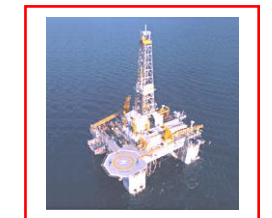
### SEARCH AND RESCUE

Lights up the darkest nights and provides a sight tool unlike any other. The Thermal Sentinel dramatically enhances the success rate of search and rescue operations in case of an accident. Mobile and stationary models can provide detection of a man size target up to a mile. Spot lost and stranded boaters navigate dangerous waterways, respond to natural and man-made disasters.



### SECURITY AND SURVEILLANCE

Monitor the perimeter of restricted areas. Deny entry to unauthorized intruders. Secure offshore platforms, even in complete darkness. Monitor important areas where lighting is not available. Reduce operational costs associated with lighting. Provide security personnel with the right tool and increase efficiency and effectiveness on the job.



# SPECIFICATIONS

Subject to change without notice

## CAMERA

### Physical

- o Dimensions: 10.5" L x 5.25" W x 7.0" H
- o Weight: 6.25 lbs (with 50mm lens)
- o Mounting Provisions: Standard Camera Mount and Tripod Mount
- o Enclosure: Weather Sealed With Baked and Chemically Cured Coating That Provides Maximum Resistance To Severe Corrosive Environments Such as Acids, Alkalis and Salt Spray. Resistant To Marring, Chipping, Weathering and Solar Exposure
- o Hard Carbon Coated IR Lens/Window Resistant to Corrosive Alkalitic, Acidic and Salty Environments

### Environmental

- o Operating Temperature: -20°C to 85°C
- o Storage Temperature: -40°C to 105°C
- o Operating Humidity: 0-95 Percent Non-Condensing
- o Environmental Enclosure (NEMA 4X)

### Electrical

- o Input Power: 8 – 32 VDC
- o Power Consumption: ~2.0 watts (typical)
- o Reverse Polarity Protection

### Interfaces

- o Mil-Spec Connectors for Video and Power to Camera and Video Display
- o Electronic Power/Video/Pan/Tilt Control Box
- o Optional Camera Control Box (provides polarity and digital zoom control)

### Performance

- o Detector Type: Uncooled Amorphous Silicon Microbolometer (320 x 240 Pixels)
- o Pitch: 30.0 µm
- o Spectral Response: 7 to 14 Microns
- o Start-up Time: 2.4 Sec +/- 10% @25° C
- o Thermal Sensitivity: <50mK
- o Refresh Rate: Real-time 30Hz
- o Contrast/Brightness: Automatic
- o Operation Modes: White Hot/Black Hot (Optional Tri-Color Scene Colorization to Factory Set Absolute Temperatures)
- o Optional Temperature Bar
- o Optional Crosshair & Temperature Measurement Display
- o Saturation Temperature: 1100° F/600° C +/-10%
- o Optional Digital Zoom (1X to 11X)
- o Output Resolution: 640 x 480 pixels for higher clarity thermal images

## PAN-TILT

- Mechanical:** Cast and plate aluminum with all internal parts corrosion protected. Tilt shaft constructed of Type 304 stainless steel
- Electrical:** 12VDC 0.7 Amp (from control box)
- Environment:** Meets weather and dust-proof requirements for installation in salt-air environments. Meets NEMA 3R rating
- Pan Rotation:** 435° (+/- 217.5°)  
1° - 23° +/- 1° per sec (variable speed)
- Tilt Rotation:** +/- 90° in vertical plane  
1° - 3° +/- .5° per sec (variable speed)
- Dimensions:** 9.12"(H) x 9.37"(W) x 5.24"(D)  
23.2 cm (H) x 23.8cm (W) x 13.3 cm (D)
- Weight:** 13.1 lbs (5.94 kg)

## CONTROLLER

- Pan/tilt Control:** Desktop or rack mount w/ remote joystick control
- Scan:** Variable speed
- Electrical**
- Input:** 12VDC
- Output:** 12 VDC
- Dimensions:** 8.25"(W) x 12"(D) x 3.5"(H)  
20.9 cm (W) x 30.48 cm (D) x 8.9 cm (H)
- Weight:** 5.5 lbs (2.49 kg)

## DISPLAY

- Display Type:** TFT Flat panel LCD
- Resolution:** 640 x 480
- Screen Size:** 8.0" diag
- Dot Pitch:** 0.136 (W) x 0.416 (H)
- Dimensions:** 6 7/8" x 8 5/8" x 1 7/16"
- Power Source:** 12 VDC Nominal

CAMERA SYSTEM (Field of View)	SYSTEM NUMBER
Thermal Sentinel System 1 (12deg)	ATE/TS4512 – SYS
Thermal Sentinel System 2 (25deg)	ATE/TS4525 – SYS
Thermal Sentinel System 3 (50deg)	ATE/TS4550 – SYS
<b>EACH SYSTEM INCLUDES:</b> Thermal Sentinel Camera Flat Panel LCD (8 inch Diag) Pan-Tilt Unit Pan-Tilt Control Box 20 ft Camera/Pan-Tilt System Cable	
<b>OPTIONAL EQUIPMENT</b>	
Camera Control Box Kit: Control Box & Interface Camera Cable	ATE/TSCAMCTLBXK
Magnetic Mount	ATE/MGMNT

Model	FOV (H x V)	Person Detect (3 Pixels) (1.8m Tall)	Person Categorize (9 Pixels) (1.8m Tall)	Object (Ship) Detect (3 Pixels) (30m Tall)	Object (Ship) Categorize (9 Pixels) (30m Tall)
TS4550	37.5 deg	~775ft (236m)	~258ft (79m)	~12917ft (3937m)	~4300ft (1311m)
TS4525	19 deg	~1465ft (447m)	~488ft (150m)	~24417ft (7442m)	~8133ft (2479m)
TS4512	9 deg	~3330ft (1015m)	~1110ft (338m)	~55500ft (16916m)	~18500ft (5639m)

Approximate Range Information (various factors affect actual range)



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