

Thermal Sentinel Driver Enhancement Vision System TS-DEV System



Thermal Imaging Vision for the Mining and Milling Industry



The **Thermal Sentinel Driver Enhancement Vision System (TS-DEV System)** is designed for rough and demanding operation. It delivers high performance digitally processed thermal imagery in a lightweight rugged enclosure that is weather and corrosion protected. The NEMA 4X enclosure is shock and vibration resistant designed to withstand the rough environment of mining and milling operations. It can be mounted on heavy mining and milling equipment such as Caterpillar tractors and trucks to provide the equipment operator with vision through dust, smoke and steam.



The **TS-DEV System** not only provides vision necessary to operate equipment in total darkness, but more importantly, it provides vision for the operator to help prevent accidents. *People obscured by smoke, dust and steam become clearly visible to the operator allowing him to take preventive measures before causing injury to others.* Its specially coated rugged enclosure offers maximum protection against weather and corrosive environments such as marine and corrosive gasses associated with mining, oil production and other demanding applications.

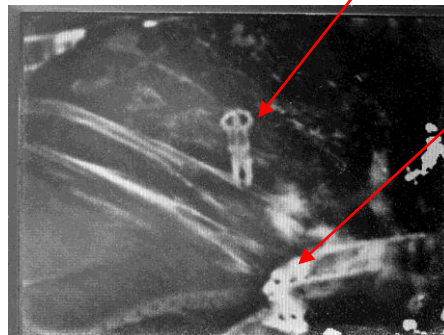


Thermal Sentinel on Caterpillar Tractor

VISION - Provides operator vision through obscurants such as dust, smoke and steam

SAFETY - Helps prevent fatal accidents by allowing operator to see workers through obscurants and in low light conditions

Person seen through steam with Thermal Sentinel Camera



Hot slag dumped by the Caterpillar tractor causing steam to rise from the wet ground

View of steam without Thermal Sentinel
(Person not visible through steam)

View of steam with Thermal Sentinel
(Person is clearly visible through steam)

FEATURES

- Best-In-Class Image Quality Amorphous Silicon Technology
- Reliable Solid State Construction
- Ambient Temperature Operation
- Rugged Weather And Corrosion Protective Enclosure
- Mil Spec Connectors
- Shielded Weather Protected Cable
- Stainless Steel Window Protection Mesh
- Sophisticated Histogram Based Image Processing And Video Output Pixel Interpolation
- Small and Light Weight
- Simple User Friendly Point-and-View Operation
- Stealth, Quiet Operation



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THERMAL-EYE

SPECIFICATIONS

CAMERA

- Optical**
 Lens Design: ATE/TS4512MCV – 12 deg FOV lens
 ATE/TS4525MCV – 25 deg FOV lens
- Detector**
 Type: Uncooled Amorphous Silicon Microbolometer
 Spectral Range: 7-14 micron
 Resolution: 320 x 240 pixels
 Pitch: 30 micron
 Sensitivity: <50mK
 Startup Time: ~ 4 sec
 Refresh Rate: Real Time 30 Hz
 Contrast/Brightness: Automatic Advanced Image Processing
 Saturation Temperature: 1100°F +/-10% with automatic electronic iris
 Temperature Stabilization: Thermoelectric cooler
 Window Type: Silicon
- Electrical**
 Operating Voltage: 8 to 32 VDC
 Operating Current Steady State: ~ .17A @ 25°C ambient, 12VDC
 Video Output Formats
 Analog: NTSC or PAL (factory setting)
 Digital: Full Resolution 16-Bit parallel
 Connector: Mil-Spec Weather Tight Multi-Pin, (Power, Video, Control)
- Mechanical (Camera)**
 Weight: 6.25 lbs (2.84 kg) (with 50mm lens)
 Dimensions: 10.5" (L) x 5.25" (W) x 7.0" (H)
 26.67 cm (L) x 13.34 cm (W) x 17.78 cm (H)
- Environmental**
 Operating Temperature: -30° C to +66° C
 (-22° F to 151°F)
 Storage Temperature: -40° C to 80° C
 (-40° F to 176°F)
 Mechanical Shock Tolerance: 20g, 11ms, any axis, while operating
 Enclosure: Environmentally sealed. Baked and chemically cured coating provides maximum resistance to severe corrosive environments such as acids, alkalis and salt spray and resistance to marring, chipping, weathering and solar exposure. Hard carbon coated IR window resistant to corrosive alkalitic, acidic and salty environments. Meets NEMA 4X rating. Mechanical shock foam employed inside enclosure to minimize shock and vibration to detector core.
- Performance**
 Range to detect a person: 12 deg FOV lens ~ Up to 3330ft (1015m)
 26 deg FOV lens ~ Up to 1465ft (445m)
 Startup: ~ 4 Sec
 Frame Rate: 30 Hz
 Contrast/Brightness Control: Automatic Advanced Image Processing
 Image: Grayscale, white objects hot; Three Color Processing Available
- Interface**
 Power and video via 6 ft coil cable (expanded) with Mil-Spec connector
- Display**
 Display Type: TFT Flat panel LCD
 Resolution: 640 X 480
 Screen Size: 8.0" diag
 Dimensions: 6 7/8" x 8 5/8" x 1 7/16"
 Power Source: 12 VDC



**Thermal Sentinel
Driver Enhancement Vision**



Shielded Coil Power/Video Cable



LCD Monitor



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