



PN: 51001700

NSN: 6650-01-619-6545

Description: M17 Day / Thermal Data Sheet



Optex Systems Inc. M17 Day / Thermal (DT) Periscope is a direct replacement for a standard M17 periscope. It is also a functional replacement for the M19, M24, and the AN/VVS2 Drivers Viewer. This unit enables 24 hour situational awareness by utilizing two cameras and a 6.5" display.

Both cameras are located within the main housing of the periscope. The display is located on the viewing end of the mount where the exiting image would normally be located on the M17 periscope. The day camera has a 1/3" color sensor with a lens that provides a 48° vertical and 62° horizontal field of view. The thermal imaging camera is a FLIR Tau 2 324 with a lens that provides a 39° vertical and 49° horizontal field of view. The output of both cameras are in NTSC video format. The display is a 6.5" Thin Film Transistor Active Matrix color LCD (TFT AM), which is United States MIL-STD-461 EMI compliant and MIL-STD-810 Temp/Vibration compliant. Its enclosure is rated IP67/NEMA6. Connectors on the unit include a MIL-DTL-38999 connector for vehicle power.

Optional Hardware

A separate Thermal Camera Programming Cable is available. The Thermal Camera Programming Cable is used for configuration control of the thermal camera, including black hot / white hot, digital zoom, and image optimization control. To use, insert Thermal Camera Programming Cable between M17 DT and existing Power Cable. (**Note:** a computer with the appropriate software is required for programming.)

A secondary display, of the same capability as the main display, can also be incorporated in the system to allow additional viewers. In addition, a tactical video recorder (TVR) can be incorporated in the system that provides 8 hours of record time for capture of mission-critical video, time stamping of video, video replay with FF, REW, Pause, and Play control. The video recorder also features "Secure Erase" and one USB download port.



FLIR Tau 2 Thermal Camera



Overview

FOV
Thermal Imager
FPA / Digital Video Display Format
Analog Video Display Formats
Pixel Pitch
Spectral Band
Full Frame Rates
Exportable Frame Rates
Sensitivity (NE Δ T)
Scene Range (High Gain)
Scene Range (Low Gain)
Time to Image
Factory Optimized Video
NTSC/PAL (field switchable)
Image Optimization
Digital Detail Enhancement
Symbology (256 gray & 256 color)

Specification

39° vertical / 49° horizontal
Uncooled Vox Microbolometer
324 X 256
640 × 480 (NTSC); 640 × 512 (PAL)¹
25 μ m
7.5 - 13.5 μ m
30/60 Hz (NTSC) - 25/50 Hz (PAL)
7.5 Hz NTSC; 8.3 Hz PAL
<50 mK at f/1.0
-25°C to +135°C
-40°C to +550°C
<4.0 sec
Yes
Yes
Yes
Yes
Yes, single-pixel resolution

Color CCD Day Camera



Overview

FOV
Image Sensor:
Signal Format:
Processing:
Horizontal Resolution:
Horizontal Frequency:
Vertical Frequency:
Minimum Illumination (Standard):
Minimum Illumination (H Version):
S/N Ratio:
Gamma:
White Balance:
Gain:
Electronic Iris:
Fixed Shutter:
High Speed Shutter:
Video Out:
Back Light:

Specifications

48° vertical and 62° horizontal
Color 1/3" 768 (H) x 494 (V) IT CCD (ICX408AK)
NTSC (Also Available in PAL Format - STC-635)
10 Bit Digital Signal Processing
480 TV Lines
15.734kHz
59.94 Hz
0.37 Lux @ F 1.2, 50 (AGC: On) IRE
0.24 Lux @ F 1.2, 50 (AGC: On) IRE
>48dB (AGC Off)
0.45 or 1.0 (DSP Adjustable)
ATW / Manual
On / Off Selectable, 0dB to 12dB Range
1/60 to 1/10,000 second (Except A & AS Models)
Low Speed Shutter: 2FLD - 16FLD (8 steps)
1/60 - 1/10,000 (8 steps)
1.0Vp-p 75 Ω
Back Light Compensation at Electronic Shutter



Monitor



LCD Size Specifications

Resolution
Nits
Viewing Angle
Contrast Ratio
Max. Power Consumption

VGA (640x480)
800 nits
160° (H) x 160° (V)
600:1
20 Watts

Technical Specifications

Display
Dimming Ratio
Video Inputs
Housing
Power Conditioning

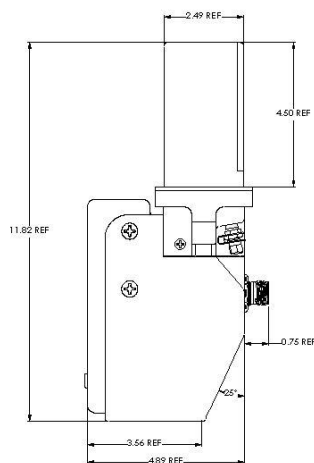
8-bit color, 16,277,216 colors
3000:1
NTSC and PAL (B,D,G,I,K)
Milled AL, Black Hard Anodized
Protected against Internal Short Circuit, Load Dump,
Over Voltage and Reverse Polarity

Military Specifications

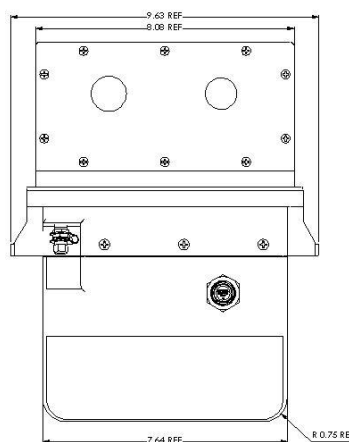
MIL-STD-461
MIL-STD-810
MIL-STD-810
MIL-STD-810
MIL-STD-810
MIL-STD-1275D†
MIL-STD-3009
MIL-A-8625 Type III (Class 1 & 2)
MIL-DTL-38999

EMI
Method 501.4 II-Op; High Temperature
Method 502.4 II-Op; Low Temperature
Method 514.5; Procedure I, General Vibration
Method 516.5; Procedure I, Functional Shock
Vehicle Power Requirements
Optional NVIS Compatibility
Standard Finish
Connector (Qualified)

Dimension Overview:



Side View



Front View

Weight: 11.5 lbs (5.2 kgs)

Power Consumption: 700 ma @ 28 VDC



Environmental Specifications:

Environmental Specifications						
Components:	Legacy M17 Periscope	Legacy M19 Periscope	Legacy AN/VVS-2 Viewer	M17 - Day - Thermal Video Display	M17 - Day - Thermal IR Thermal Camera	M17 - Day - Thermal Day Camera
Test Description						
Low Temperature - Storage -54°C	✓ ¹	✓ ⁵	✓ ⁶	✓ ²	✓ ²	✓ ²
Low Temperature - Operating -40°C	N/A	N/A	✓ ⁶	✓ ²	✓ ²	✓ ²
High Temperature - Storage 71°C	✓ ¹	✓ ⁵	✓ ⁶	✓ ²	✓ ²	✓ ²
High Temperature - Operating 62.5°C	N/A	N/A	✓ ⁶	✓ ²	✓ ²	✓ ²
Mirror and Window Laminations	✓ ¹	N/A	N/A	N/A	N/A	N/A
Humidity	✓ ¹	N/A	✓ ⁶	✓ ²	✓ ²	✓ ²
Vibration	✓ ¹	✓ ⁵	✓ ⁶	✓ ²	✓ ²	✓ ²
Basic Shock	✓ ¹	N/A	✓ ⁶	✓ ²	✓ ²	✓ ²
Gunfire Shock	✓ ¹	N/A	✓ ⁶	✓ ²	✓ ²	✓ ²
Submergence / Immersion	✓ ¹	✓ ⁵	✓ ⁶	✓ ²	✓ ²	✓ ²
Fungus	✓ ¹	N/A	✓ ⁶	✓ ²	✓ ²	✓ ²
Conducted Emissions CE 101, CE 102	N/A	N/A	N/A	✓ ³	✓ ⁵	✓ ⁵
Conducted Susceptibility CS 101, CS 114, CS 115, CS 116	N/A	N/A	N/A	✓ ³	✓ ⁵	✓ ⁵
Radiated Emissions RE 101, RE 102	N/A	N/A	N/A	✓ ³	✓ ⁴	✓ ⁵
Radiated Susceptibility RS 101, RS 103	N/A	N/A	N/A	✓ ³	✓ ⁵	✓ ⁵
MIL-STD-810G Altitude	N/A	N/A	N/A	✓ ²	✓ ²	✓ ²
RoHS Compliant	N/A	N/A	N/A	✓	✓	✓

Legacy M17, M19 & AN/VVS-2 data provided for comparison purposes only

- ¹ MIL-PRF-62420A(AT) - Legacy M17 Performance Specification
- ² equivalent specification MIL-STD-810G
- ³ MIL-STD-461F - Control of Electromagnetic Interference (EMI)
- ⁴ equivalent specification IEC 61000-6-3 (Class B)
- ⁵ shielded EMI compliant enclosure
- ⁵ MIL-P-48566(MU) - Legacy M19 Performance Specification
- ⁶ MIL-PRF-49082E - Legacy AN/VVS-2 Performance Specification