



PN: 51006070

NSN: 6650-01-619-6545

Description: M17 Day / Thermal Gen II 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 7.0" 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 1/2.8" color sensor with a lens that provides a 60° field of view. The thermal imaging camera is a FLIR Tau 2 640 with a lens that provides a 37° vertical and 45° horizontal field of view. The output of both cameras are in NTSC video format. The display is a 7.0" 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.



FLIR Tau 2 Thermal Camera



	Specification	
	Gen I (No Longer Available)	Gen II
FOV	39° vertical / 49° horizontal	37° vertical / 45° horizontal
Thermal Imager	Uncooled Vox Microbolometer	Uncooled Vox Microbolometer
FPA/Digital Video Display Format	324 X 256	640 x 512
Analog Video Display Format	640 x 480 (NTSC); 640 x 512 (PAL)	640 x 480 (NTSC); 640 x 512 (PAL)
Pixel Pitch	25 µm	17 µm
Spectral Band	7.5 - 13.5 µm	7.5 - 13.5 µm
Full Frame Rates	30/60 Hz (NTSC) - 25/50 Hz (PAL)	30/60 Hz (NTSC) - 25/50 Hz (PAL)
Exportable Frame Rates	7.5 Hz NTSC; 8.3 Hz PAL	30 Hz (NTSC); 25 Hz (PAL)
Sensitivity (NEΔT)	<50 mK at f/1.0	<50 mK
Scene Range (High Gain)	-25°C to +135°C	-40°C to +160°C
Scene Range (Low Gain)	-40°C to +550°C	-40°C to +550°C
Time to Image	<4.0 sec	<5.0 sec
Factory Optimized Video	Yes	Yes
NTSC/PAL (field switchable)	Yes	Yes
Image Optimization	Yes	Yes
Digital Detail Enhancement	Yes	Yes
Symbology	Yes, single-pixel resolution	Yes, single-pixel resolution

Color CCD Day Camera



	Gen I (No Longer Available)	Gen II
FOV	48° vertical and 62° horizontal	60°
Image Sensor:	Color 1/3" 768 (H) x 494 (V) IT CCD (ICX408AK)	1/2.8" Sony Starvis IMX327
Signal Format:	NTSC (Also Available in PAL Format - STC-635)	NTSC/PAL (Selectable)
Processing:	10 Bit Digital Signal Processing	3G-SDI
Resolution:	480	1080p
Frequency:	60 Hz	60 Hz
Minimum Illumination (Standard):	0.37 Lux @ F 1.2, 50 (AGC: On) IRE	0.01 Lux Color 0.005 Lux B&W (F1.2)
White Balance:	ATW / Manual	ATW / AWC / Indoor / Outdoor / Manual
High Speed Shutter:	1/60 - 1/10,000 (8 steps)	Auto / Manual (1/30 ~ 1/50,000)
Back Light:	Back Light Compensation at Electronic Shutter	Off / WDR / BLC / ACE



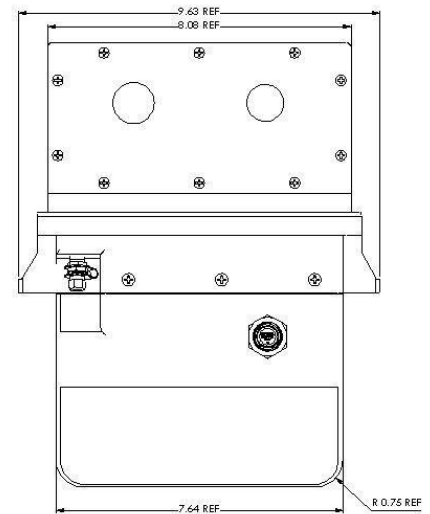
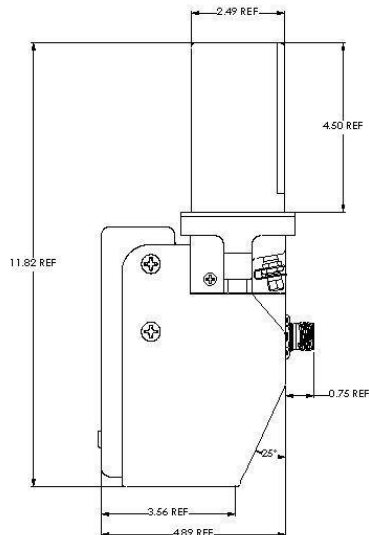
Monitor



	Gen I (No Longer Available)	Gen II
Resolution	VGA (640x480)	Full HD 1920 x 1080
Nits	800	500
Viewing Angle	160° (H) x 160° (V)	140° (H) x 120° (V)
Contrast Ratio	600:1	600:1
Max. Power Consumption	20 Watts	30 Watts
Display	8-bit color, 16,277,216 colors	8-bit color, 16,277,216 colors
Dimming Ratio	3000:1	1000:1
Video Inputs	NTSC and PAL (B,D,G,I,K)	SDI (1) 3G/HD/SD, HDMI (1), DVI-I (1) Digital/Analog, Composite Video (3); Auto Sensing NTSC and PAL-BGHID Formats; SDI (1) 3G/HD/SD, Composite Video (1)
Housing	Milled AL, Black Hard Anodized	Milled AL, Black Hard Anodized
Power Conditioning	Protected against Internal Short Circuit, Load Dump, Over Voltage and Reverse Polarity	Protected against Internal Short Circuit, Load Dump, Over Voltage and Reverse Polarity
MIL-STD-461	EMI	EMI
MIL-STD-810	Method 501.4 II-Op; High Temperature	Method 501.4 II-Op; High Temperature
MIL-STD-810	Method 502.4 II-Op; Low Temperature	Method 502.4 II-Op; Low Temperature
MIL-STD-810	Method 514.5; Procedure I, General Vibration	Method 514.5; Procedure I, General Vibration
MIL-STD-810	Method 516.5; Procedure I, Functional Shock	Method 516.5; Procedure I, Functional Shock
MIL-STD-1275D†	Vehicle Power Requirements	Vehicle Power Requirements
MIL-STD-3009	Optional NVIS Compatibility	Optional NVIS Compatibility
MIL-A-8625 Type III (Class 1 & 2)	Standard Finish	Standard Finish
MIL-DTL-38999	Connector (Qualified)	Connector (Qualified)

Dimension Overview:

Length: 5.64"
Width: 9.63"
Height: 11.82"
Weight: 11.5 lbs (25.3 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

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