



Photo-Sonics, Inc.

F/A-18C/D/E/F and E/A-18G Camera

The F/A-18C/D/E/F and E/A-18G, Head Up Display (HUD) camera is a new configuration operating on Lot XII and higher series F/A-18s.



Part Number 93 - 2040 - 100 NSN 1270 - 01 - 529 - 7073

- The input connector to the camera utilizes the same connector type and the same pin function as the legacy camera.
- The body of the camera is the same size and utilizes the same mechanical mounting provisions used on the legacy camera.
- The GO indicator lamp is Night Vision Goggle (NVG) compatible.
- The camera looks into the HUD-combining glasses and accurately records the HUD symbology and outside world, permitting accurate recording of “what the pilot saw.”
- The new camera has been flown by the US Navy and the following enhanced features were noted:
 - Better color and higher resolution
 - FOV extended coverage including recording of all the azimuth heading numerics and the complete roll angle information in the Navigation mode.
 - Intended low-light level coverage including night recording
 - Two Built-In Test (BIT) features

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FEATURES

- ◆ Automatic Exposure Control with lens iris
- ◆ Adjustable air-to-ground exposure lock (0-10 sec)
- ◆ Visual event mark, completion of GRD
- ◆ 115 VAC, 85 to 265 VAC, 47-440 Hz, Single Phase “C”
- ◆ Pickup device: Interline-transfer hyper HAD CCD, 1/2”
- ◆ Horizontal resolution:
 - ◇ NTSC: 470 TV lines
 - ◇ PAL: 460 TV lines
- ◆ Picture elements:
 - ◇ NTSC: 768(h) x 494(v)
 - ◇ PAL: 752(h) x 582(v)
- ◆ S/N ratio:
 - ◇ NTSC: >-48dB
 - ◇ PAL: >-46dB
- ◆ Sensitivity: 2000 Lux at f/5.6
- ◆ Automatic AGC
- ◆ Minimum sensitivity: 0.33 Lux AGC-On
- ◆ Shutter speeds: 1/60th second, 1/100,000 second, flickerless, and CCD iris (AEC), Off for F-18
- ◆ Gamma: 0.45/1
- ◆ White balance: ATW, 3200K, 5600K, and Manual
- ◆ Video formats: Y/C component and NTSC composite (NTSC used on F-18)
- ◆ Weight: 2 lb 6 oz
- ◆ 12 month warranty

ENVIRONMENTAL SPECIFICATIONS

- ◆ Vibration (non-gunfire) random/sine low frequency region V-FF-3. Perform vibration. Equipment was operating and monitored during testing.
- ◆ Vibration (gunfire) sine test schedule (total time each axis – 150 min)
- ◆ Vibration (gunfire) sine test levels. Perform sine vibration. Total time in each axis was 150 minutes.
- ◆ Vibration (non-gunfire) random test levels. Perform endurance levels 120 minutes each axis. Equipment was operating and monitored during testing.
- ◆ Service shock (longitudinal, vertical and lateral). Perform 6 total shocks, 3 in each direction for each test. Figure 4-3.2: Service shock test requirements / Shock response spectrum region S-FF-2.
- ◆ Crash safety (Perform crash safety per Fig 4-5). Crash test requirements / All shock regions.
- ◆ Thermal non-operating thermal cycling: -57°C. Dwell for a period of 2 hrs. Raise the temperature to +125°C and dwell for 16 hrs.
- ◆ Operating thermal cycling: -40°C. Dwell for a period of 2 hrs. Raise the temperature to +71°C and dwell for 16 hrs. Raise the chamber temperature to +85°C and dwell for 30 minutes.
- ◆ Thermal shock: Perform thermal shock per MIL-STD-810C Method 503.1. Three thermal cycles from +71°C to -57°C with a 5 minute maximum transfer time and a 4 hr dwell at each temperature plateau.
- ◆ Altitude: Normal operating – test per MIL-STD-810F, Procedure 2. Reduce pressure at a rate not to exceed 2,000 Ft/min to an altitude of 50,000 ft. Dwell for a period of 1 hr.
- ◆ Explosive decompression: Test per MIL-STD-810F, Procedure 4. Reduce chamber pressure to 2,437 m (8,000 ft), then in <0.1 seconds reduce pressure to an altitude of 12,192 m (40,000 ft). Maintain this pressure for 10 minutes.
- ◆ Salt and fog: Test per MIL-STD-810F, Method 509.4. Perform 2 cycles of Salt fog of 24 hrs and 24 hrs drying per cycle.
- ◆ Explosive atmosphere: Test per MIL-STD-810F, Method 511.4, Procedure 1 (operation in explosive atmosphere).
- ◆ EMI: RE-102, CE-102, RS-103 including video during radiation.

OPTICAL SPECIFICATIONS

Lens Focal Length	FOV Horiz	Degrees Vert	FOV Horiz	Milliradians Vert	Application
16.42mm, f1.4	22.06	16.63	384.9	290.3	HUD-Special Boresighted to all US Navy requirements