

Boeing 787 Dreamliner Video System

Advanced, integrated security and surveillance solutions
for modern airplanes



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Where ingenuity takes off™



UTC Aerospace Systems

Cabin Video Monitoring

UTC Aerospace Systems provides one of the most advanced airplane security and surveillance systems in commercial transport.

The Cabin Video Monitoring System (CVMS) provides video and audio surveillance capability through the deployment of up to 16 covertly mounted digital cameras that also contain an integrated microphone. The cabin video can be viewed real-time and/or recorded. Flight Deck Entry Video Surveillance System cameras can also be integrated into the CVMS to provide the flight crew with comprehensive, situational awareness of all on-airplane systems.

Equipment

- Up to 12 8410P1 Series Internet Protocol (IP) cameras provide color or monochromatic images and digital audio and video
- 8930A1 series Digital Video Recorder (DVR)
- 256GB removable solid state memory

CVMS P/N Table

IP Camera	8410P1 series
Digital Video Recorder (DVR)	8930A1 series
Digital Video Recorder Storage Memory	8732C1 series
Security Camera Interface Unit (SCIU)	8730B2 series
CVMS Client Application	

8410P1 Series Camera Specifications

Video Signal	Dual Stream MPEG-4 (H.264) and MJPEG over Ethernet (RTP/RTSP)
Video Format	Color or Monochromatic
Resolution	640 x 480 pixels
Field of View	50° horizontal / 37.5° vertical
Frame Rate	1 - 30 FPS configurable
Power Consumption	2.5W max. at 28VDC
Video Compression	H.264
Operating Temperature	5°F to 131°F / -15°C to +55°C
Weight	1.5 lb. / 0.68 kg
Dimensions (without connector)	2.7 x 2.7 x 1.3 in. 6.8 x 6.8 x 3.2 cm
Qualification	Qualified for commercial airplanes
Low Light Performance	1 lux
Microphone	Omnidirectional, -44 dB sensitivity
Audio Output	G.711 / AAC



CVMS Benefits & Features

- Enables real-time audio and video cabin monitoring
- IP cameras allow transition from analog to all-digital system, customizable to meet installation requirements
- System accessed by Class 3 EFB system or via Ground Access Panel
- Digital Video Recorder (DVR) capability
- Flight deck notified of CVMS activation via Engine Indicating and Crew-Alerting System (EICAS) "Cabin Alert" message

Digital Video Recorder Specifications

Video Interfaces

12 ARINC664-2 10/100 Mbit Ethernet ports with 28VDC IP camera power
2 ARINC664-2 10/100 Ethernet (for video output to DVM)
1 ARINC664-2 10/100 Ethernet (for video input/output to SCIU)
1 ARINC664-2 10/100 Ethernet (for video/sound output to P56 ground panel)

Recording 32GB C-Fast solid state memory
MPEG2-TS file format
Event marking capability

Control Interfaces 1 ARINC664-2 10/100 Ethernet
(not A/C connected) 1 RS-232

Power Consumption 25W at 28VDC plus 2.5W per attached camera

Temperature 5°F to 131°F (operating) /
-15°C to +55°C (operating)
-67°F to 185°F (storage) /
-55°C to +85°C (storage)

Weight 6 lbs. max. / 2.7 kg max.

Qualification All applicable parts of RTCA / DO-160

Digital Video Monitor Specifications

Bezel Keys Power
Backlight up / down
Mode button: Screensaver / video stream toggle with single press

Display 10.4 in. (26.4 cm) diagonal LCD
Backlight provides 64 levels of brightness

Resolution XGA 1024 x 768 pixels

Field of View 176° horizontal / 176° vertical

Color Depth 18-bit color
(262, 144 distinct colors)

Power Consumption 31W nominal

Ethernet 10/100 Base T

Weight 4.4 lbs. max. / 2 kg max.

Temperature 5°F to 131°F (operating) /
-15°C to +55°C (operating)
-67°F to 185°F (storage) /
-55°C to +85°C (storage)

Qualification All applicable parts of RTCA / DO-160

Direct View System

The Direct View System (DVS) is composed of up to two video monitors and up to two covertly mounted digital video cameras used by flight attendants to monitor first-class cabin passengers during taxi, take-off and landing in order to comply with National Airworthiness Authority (NAA) certification requirements. The 8410P1 cameras employ state-of-the-art digital CMOS imaging sensor technology to generate a clear image in all lighting conditions.

Equipment

- Two 8410P1 series Internet Protocol (IP) cabin cameras provide monochromatic images and digital video
- Up to two independent 8725H1 series Direct View Monitor
- Display Units with 10.4 in. (26.4 cm) (diagonal) XGA touchscreen display with 1024 x 768 resolution and enhanced flush mountable LCD housing

DVS P/N Table

IP Camera	8410P1 series
Direct View Display Unit (with Compact Flash included)	8725H1 series



DVS Benefits & Features

- Enhances cabin crew's visibility of the first-class passenger cabin
- Internet Protocol (IP) cameras allow transition from analog to all-digital system, customizable to meet installation requirements
- Flexibility and expandability with next generation digital video systems
- Interfaces directly to Ethernet-based systems
- State-of-the-art digital CMOS imaging sensor technology for clear images in all lighting conditions, including low-light/night
- Camera housed in covert pin-hole style mounting to maintain discrete appearance in the cabin
- High resolution display
- Stand-alone system or can be integrated with CVMS
- Customizable screen saver to prevent passenger viewing of direct view video
- Supports certification to CFR 25.785

Flight Deck Entry Video Surveillance System

UTC Aerospace Systems offers a Video Surveillance System to easily integrate and add value to the 787 EFB by incorporating video security and surveillance capabilities and meeting all Boeing and regulatory authority requirements for flight deck door monitoring.

The Security Camera Interface Unit (SCIU) features two NTSC video outputs for transmission to a remote viewing station and also supports up to eight cameras and an open architecture for connectivity to other airplane systems. Video integration software displays video images in a user-friendly format that interfaces with the EFB software application manager and meets Boeing Human Factors requirements.

Three cameras are positioned above the cockpit door and in the galley for complete viewing coverage. All three camera images are displayed simultaneously as thumbnails on the EFB screen or may be selected individually for display in the large primary image by touching the screen.

Equipment

- Three black and white, near-infrared cameras capable of viewing images in complete darkness (0 lux)
- One SCIU and video integration software
- EFB video application

8410F1 Camera Specifications

Video Signal	NTSC
Resolution	575 TV lines
Minimum Illumination	0 lux
Pick-up Device	1/3 in. (0.84 cm) CCD
Iris Control	Auto
Field of View	Up to 105°
Power Consumption	3W
Weight	0.55 lbs. / 0.25 kg
Operating Temperature	14°F to 131°F -10°C to +55°C
Qualification	All applicable portions of RTCA / DO-160

For additional information:
14300 Judicial Road, Burnsville, MN 55306 U.S.A.
Tel: +1 952 892 4000
sis@utas.utc.com

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Benefits & Features

- Utilizes Boeing EFB displays combined with UTC Aerospace Systems' high-resolution video surveillance cameras with integrated near-infrared lighting
- Meets ICAO Annex 6, EUROCAE ED-123 and FAA NPRM for flight deck door monitoring
- Video "freeze" option and full menu page that includes its own independent brightness and contrast controls
- Certified on Boeing 787

8730B1 Security Camera Interface Unit Specifications

Inputs / Outputs	Standard 3 NTSC inputs Expansion up to 8 NTSC video inputs 4 bi-directional Ethernet connections 2 NTSC outputs 1 RS232 serial port 1 RS485 serial port 12 discrete inputs 4 discrete outputs Optional removable video storage device
Power Consumption	65W
Weight	13.2 lbs. / 6.0 kg
Operating Temperature	5°F to 131°F / -15°C to +55°C
Qualification	All applicable portions of RTCA / DO-160