

Enhanced Color Programmable Display Generator (ECPDG)

ECPDG Specifications

Overall size 7.66" H x 6.3" W x 17.63" L
 (excluding connectors and handles)
 Weight 31 pounds
 Cooling Vehicle-supplied forced air
 Power consumption 285 Watts at 115 VAC, 3-phase, 400Hz

System Function Processor

Processor Custom CPU-1750A 64-bit data,
 32-bit address or PowerPC 755 (400MHz)
 Throughput Greater than 11 MIPS
 (digital avionics instruction set)
 Memory 4MB RAM (8MB growth) with battery
 back-up or 64 MB (with PPC option)
 Programming language Optional JOVIAL or C

Display Function Processor

Processors PowerPC 750 (240 MHz)
 REALimage 4000 (75 MHz)
 Memory 32 MB SDRAM, 16MB Flash,
 16 MB Texture, 15 MB Frame Buffer
 (79 MB total)
 Programming language C
 Character generation Anti-aliased symbology and haloing
 Font sizes (pixels) 28x36, 20x28, 14x18, 10x14, 8x12

Optional Digital Map Features

Solid state memory 5 Gbyte or larger Storage,
 reloadable "on-aircraft"
 Database support CADRG, DTED, VPF, C/B, data frames
 Combined formats Elevation banding on chart
 with vector overlays
 Map scales 1:12.5M to 1:5M
 Orientations North up, heading up, SLEW
 Update rate 20 Hz+
 Symbol overlays MIL-STD-2525B, threat rings, intervisibility

Other Features

Number of independent 2 (with aft seat repeaters)
 display channels 4 independent (growth)
 Video inputs 13 user configurable to any
 combination of RGB or monochrome.
 525-line 60 Hz field, RS-170 standard
 Features High-speed, solid-state memory
 Color VTR outputs (NTSC)
 Digital map capable (growth)
 Symbology anti-aliasing
 NTSC TV input (growth)
 Digital video (LVDS) output (growth)
 Internal data buses PCI standard
 External interfaces Five 1553 (growth to 6)
 Full bus-controller capable
 Six RS-422
 High-speed 100BaseT Ethernet (DFP)
 Two Ethernet (10BaseT) debug



4-inch x 4-inch Color Multifunction Display System



HIGH-RESOLUTION, FULL-COLOR VIDEO
 UNDER ALL LIGHTNING CONDITIONS

**Advanced color multifunction display system
 used for the F-16 fighter**

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Honeywell's 4-inch x 4-inch color multifunction display system for the F-16 fighter provides the pilot with high-resolution, full-color video under all lighting conditions, from night-vision goggles to full sunlight.



High resolution, full color display system – Honeywell's display solution for the F-16 Fighter

The display system consists of the enhanced color programmable display generator (ECPDG) and two common color multifunction displays (CCMFD). The color displays utilize ruggedized commercial liquid crystal display technology that is designed to withstand the harsh environment found in modern fighter cockpits.

The display generator is the fifth generation graphics processor fielded by Honeywell for the F-16. Through the use of state-of-the-art microprocessors and graphics engines, it provides orders of magnitude increases in throughput, memory and graphics capabilities.

The ECPDG also contains substantial growth capabilities including a high-speed Ethernet interface (10/100BaseT) and all the hardware necessary to support digital moving maps. The digital map function can be enabled by the addition of software. The digital map function includes 5 Gbytes of re-writable, non-volatile mass memory that supports a wide array of map databases, map scales, and overlays.

Another growth option is the capability for the ECPDG to upload and download still-screen images over the high-speed Ethernet. This function could be useful for transmitting and receiving images over a data modem.

The ECPDG also has growth capability to support a 3 dimensional Synthetic Vision System (SVS).

Key Features

- Full-color, high-resolution
- Sunlight readable
- Night-vision-goggle compatible
- Full military environment
- Smooth, high-quality graphics

Typical Applications

- Primary flight display
- Navigation display
- Tactical display
- Radar warning display
- Moving map display



Common Color Multifunction Display

CCMD Specifications

Size	.5.25" W x 5.125" H x 11.36" L
Maximum weight	.13 pounds
Power	.68 Watts max / 35 Watts typical
Bezel power	.10 Watts (from 5 VAC)
Maximum LCD and lamp heater power	.111 Watts (from A/C 28 VDC)
Warm-up time	.1 minute (-20 degrees C)
Predicted MTBF	.4,400 hours

Display Parameters

Display viewing area	.4 x 4-inch square
Screen resolution	.480 x 480 pixels
Display technology	.Active matrix liquid crystal
Maximum white brightness	.+230 fL, after 750 hours
Dimming ratio	.5750:1
Brightness uniformity	.±30% entire surface
NVIS compatibility	.Mil-L-85762A, class B compatible
Contrast ratio (10,000 fc ambient)	.6:1
LCD video levels per primary color	.256 (16.7 million colors)
LCD response time	.Less than 25 mS (flicker-free)
Pixel (color group) type	.RGB stripe
Pixel (color group) density	.±0.05%

Raster Video Processing

Color (RGB) input channels	.One
Input receiver	.Differential analog Digital LVDS (growth)
Input video: line/frame/field rate	.525 / 30 Hz / 60 Hz interlaced
Displayed video: line/frame rate	.525 / 120 Hz non-interlaced
A/D conversion rate	.27.45 MHz
Anti-aliasing filter	.Low-pass

