General Digital has designed the 90-4104-015 LCD for integration into avionic (cockpit and simulation), and military applications. The LCD has been custom designed to incorporate a 10.4” XGA display with a MIL-L-85762A-compliant sunlight readable LED backlight. The LCD has been carefully selected so that we could incorporate extended color gamut technology, which provides deep, sharp reds for instant visual acquisition of screen content, such as warning indicators and other critical information. Additionally, the LCD features extended environmental performance and a 10-year manufacturing guarantee. Specially formulated ultra-clear antireflective glass with an index-matched, optically bonded EMI filter provides class-leading specular and diffuse reflection, and extra high contrast. What this means for the user is a dramatic increase in brightness and optical clarity. A variety of integration options are available including custom LED Rail Designs, LED Backlight Controllers, LCD Heaters, and Specialty Overlays, Filters and Coatings. The 90-4104-015 can be purchased separately, or integrated by General Digital into one of our standard or custom monitors, or smart display systems (Simulation or Cockpit). Please speak with a Sales Engineer for additional information at 800.952.2535.

### FEATURES
- 10.4 inch, 1024 x 768 (XGA) Resolution
- Sunlight Readable Edge-lit LED Backlight
  - Capable of Greater than 800 Nits Luminance @ 13.9 Watts
  - Weber Contrast of 10.21:1 (Class 5 Performance)
- Ultra-Wide Color Gamut with Deep Reds for Warnings, etc.
- Extended Temperature Range
- Wide Viewing Angle (±80° H/+80°/–60° V)
- Very Low Specular and Diffuse Reflectance
- 10-Year Availability
- Ideal for Cockpit and Simulator Display Systems

### STANDARD ENHANCEMENTS
- Custom Sunlight Readable LED Rails
- Custom Light Guide Specially Tuned to the LED Rails
- Custom Film Stack to Optimize Brightness/Contrast
- Custom P-Frames (With and Without Optional LCD Heater)
- Custom Backlight Enclosure
- Optically Bonded EMI Glass Overlay with AR Coating

### OPTIONAL ENHANCEMENTS
- Optically Bonded LCD Heater
- Variety of Overlays (Touch Screens, Glass Substrates, EMI Filters, etc.) and Optical Coatings
- Variety of LED Backlight Controllers (~1000:1 Dimming Ratio)
- Direct-lit LED Backlight
## GENERAL SPECIFICATIONS

### Backlight
- Sunlight Readable, High Efficiency LED Backlight (GDC manufactured)

### Luminance (dark room) @ Contrast (dark room) @ Power
- 800 cd/m² @ 1206:1 @ 13.9 W [Note 1]

### Module Size (mm)
- 221 (W) x 166.8 (H) x 1.26 (D)

### Display Area (mm)
- 210.432 (H) x 157.824 (V)

### Display Size (diagonal)
- 10.4 inches

### Drive System
- A-Si TFT Active Matrix

### Display Color
- 16.7 Million Colors

### Pixels
- 1024 (H) x 768 (V)

### Pixel Arrangement
- RGB 2 Domain Stripe

### Dot Pitch (um)
- 205.5 (H) x 205.5 (V)

### Viewing Angle
- Horizontal: ±85°; Vertical: ±85° (at the contrast ratio > 10:1)

### Color Gamut
- NTSC 1987 color space
- 112% typical (at LCD panel center)

### Response Time
- T_{on} + T_{off} (10–90%); 30 ms (typical)

### Signal System
- 8-bit Digital Signals for Data of RGB Colors, Dot Clock (CLK), Data Enable (DE)

### Shock
- 220 G, 2 ms ½ Sine Wave

### Vibration
- 1.5 G (10–300 Hz)

### Power Supply Voltage
- LCD Panel Signal Processing Board: 3.3 V

### Storage Temperature
- -55°–125° C

### Operating Temperature
- -30°–85° C

### Weight
- <200 g

## CONTRAST (Per MIL-L-85762-A) [Note 2]

### Luminance (dark room) @ Contrast (sunlight conditions) @ Power
- 800 cd/m² @ 10.21:1 @ 13.9 W [Note 1]

### Weber Contrast / Class
- 9.21 / 5

## CONTRAST @ 10,000FC AMBIENT ILLUMINATION

### Luminance (dark room) @ Contrast (sunlight conditions) @ Power
- 800 cd/m² @ 30.79:1 @ 13.9 W [Note 1]

### Weber Contrast
- 29.79

## DIFFUSE & SPECULAR REFLECTION

### Diffuse Reflection
- <0.15% (0.131% actual)

### Specular Reflection
- <1.3%, subject to testing (1.44% with non-index-matched bond)

## NOTES

1. Rail temperature of 50° C.
2. All the data for the 90-4104-015 was obtained while driven by a Kikisui PAD35-10L power supply. Measurements were taken with a Minolta CS-100 photometer.
COLOR AREA COVERAGE & TOTAL AREA COMPARISON OF NTSC 1987 AND sRGB COLOR SPACES

<table>
<thead>
<tr>
<th>Color Space</th>
<th>Area Coverage</th>
<th>Area Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTSC 1987</td>
<td>98.3%</td>
<td>112.24%</td>
</tr>
<tr>
<td>sRGB, HDTV</td>
<td>94.3%</td>
<td>120%</td>
</tr>
</tbody>
</table>

The 90-4104-015 Display Head Assembly can be integrated into a variety of General Digital monitors, monitor kits, flight simulator display systems and cockpit display systems.

VueSim 10.4"  
Saber Standalone Solar 10.4"  
CoPilot 6104 10.4"