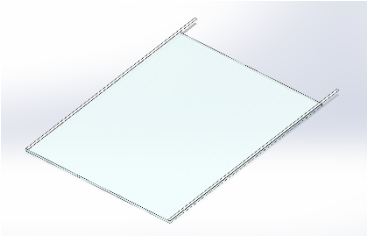
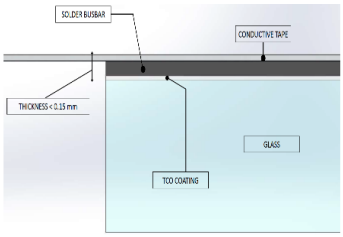
# LCD Heater Panels






## Key Features

- High optical transparency
- Low specular reflectance
- Precise electrical resistivity
- Thermally uniform and stable

## Applications

- Avionics displays
- Ruggedized displays
- Industrial Displays

## High Performance and Reliability

MAC Thin Films industry leading technology produces high transmission, low reflection, thermally stable LCD heater panels where the performance and reliability of the LCD display is a critical element in design functionality.

Our LCD heaters are manufactured in large vacuum deposition chambers where our source materials are thermally evaporated with precisely controlled layers of dielectric materials and indium tin oxide to achieve highly optimized optical and electrical properties for demanding applications.

MAC Thin Films is committed to providing our customers with the expertise needed to navigate through the design and prototyping phases. We are also committed to delivering production units with unsurpassed product performance and complemented with superior customer service.

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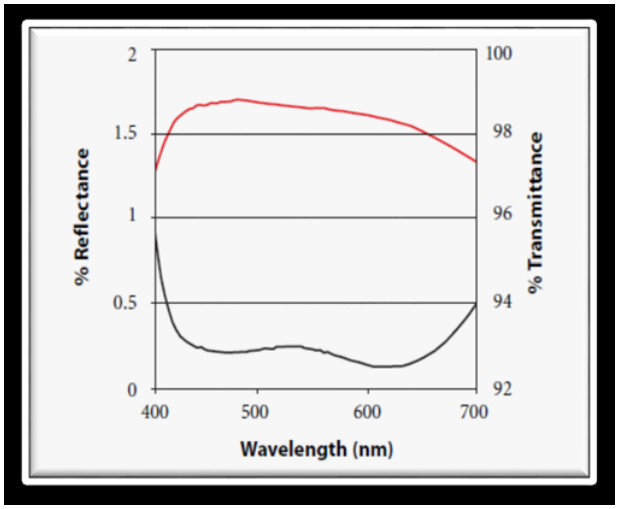
# LCD Heater Panels

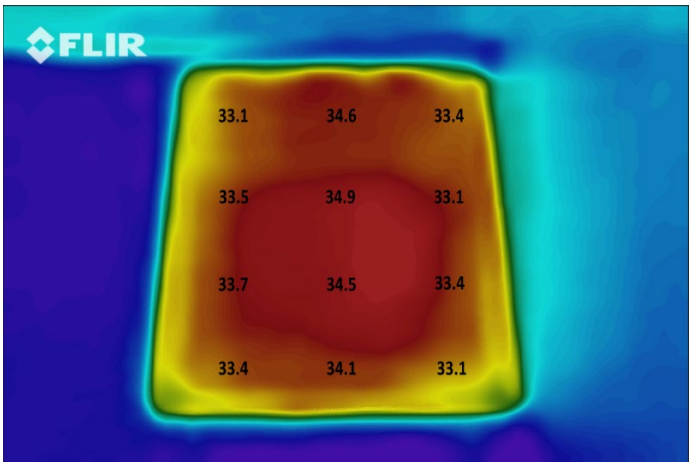
## Construction & Performance Features

- **Available Substrates**:
  - Clear soda lime float glass
  - Corning Eagle XG™
  - Schott Boro 33™
  - Thickness ranges from 0.7mm to 6mm
- **Coating & Mechanical Tolerancing**:
  - Sheet Resistivity: +/-20%
  - L x W: (0.7-1.9mm) +/-0.38mm
  - L x W: (2.3-6mm) +/-0.5mm

**Optical Performance (IM 16 Ω/☐)**




**Thermal Uniformity**




- **Environmental & Durability Tests**
  - 24-hour humidity (MIL-C-675)
  - Adhesion: Snap tape (MIL-M-13508)
  - Abrasion: 40 eraser rubs (MIL-C-675)
  - Salt solubility (MIL-C-675)
  - Temperature resistance (MIL-C-14806)

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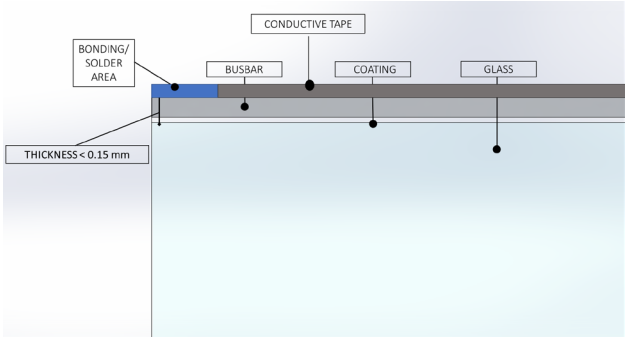
# LCD Heater Panels

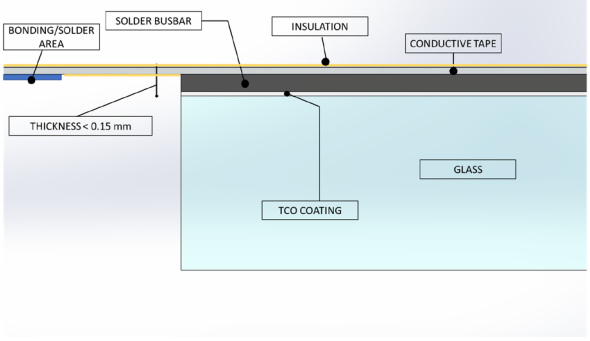
- **Typical Heater Panel Characteristics**

| | |
|---|---|
| **Total Bus Bar Height (flat connector)** | **< 0.15 mm** |
| **Total Bus Bar Height (round AWG27 wire)** | **< 0.80 mm** |
| **Pull Strength** | **> 4N (square corner)** |
| | **> 2N (chamfer corner)** |
| **Power Density Rating** | **30.0 W / in$^2$** |
| | **4.7 W / cm$^2$** |
| **Thermal Uniformity** | **+/- 2°C** |

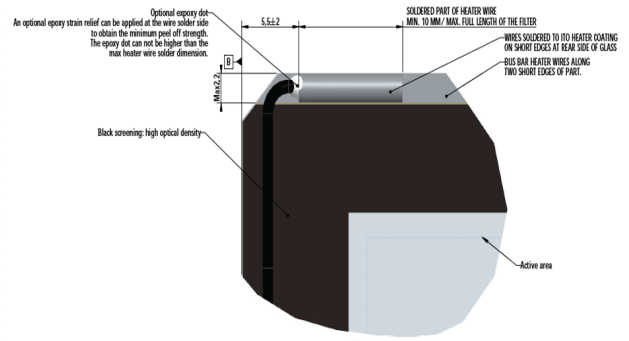
## Bus Bar Options




**Direct Bonding to Bus Bar**




**Flat Flexible Connector**




**AWG27 Embedded Wire**

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