

# Gibraltar™ 4K UltraScale Formatter

## Hardware Assembly

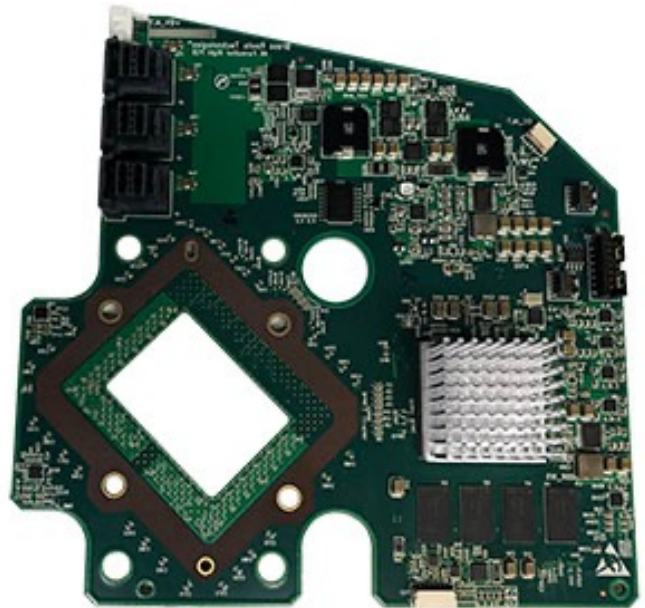
### Description:

The Gibraltar™ 4K UltraScale Formatter from Brass Roots Technologies enables the highest performance display and imaging with 1.38" native 4K DMDs from Texas Instruments.

Designed for both 1-chip and 3-chip DLP® projection systems, the Gibraltar™ 4K UltraScale Formatter hardware integrates a high performance Xilinx® UltraScale FPGA and DDR4 memories to fully leverage the advanced firmware-based Gibraltar™ Processing architecture, which converts video and graphics input data into floating-point multi-toned PWM bit-planes for the 4K DMD.

Incredibly high-bandwidth and bottleneck-free processing enables true 4K resolution and flagship image quality up to 120 Hz in the single-chip configuration, while 3-chip systems achieve unrivalled image quality and Ultra-HFR performance up to 360 FPS.

A distinguishing feature of the Gibraltar™ 4K UltraScale Formatter design is a high-bandwidth, multi-channel SerDes input data interface. Numerous input data formats are supported through minor reconfiguration of the SerDes receiver firmware.



### Top Features:

- Universal hardware design supports both 1-chip and 3-chip DLP® projection (1.38" 4K DMD)
- 1-chip Performance: Flagship image quality up to 120 fps at native 4K resolution
- 3-chip Performance: Ultra-HFR 360 FPS at native 4K resolution
- Advanced Gibraltar™ 4K Processing
- Xilinx® UltraScale FPGA and DDR4 memories
- High-speed multi-channel SerDes interface



## Gibraltar™ 4K UltraScale Formatter

### General Specifications

- **High-Bandwidth Input Interface**
  - 12x SerDes Input Data channels (60+ Gbps)
  - 1x SerDes Control channel
  - QSPI Flash Memory Interface
  - I2C Peripheral Interface
- **Xilinx™ Kintex® Ultrascale FPGA (XCKU035)**
  - Integrated 4K Gibraltar™ Processing supports Pixel Processing Clock rate up to 300 MHz
  - Reconfigurable firmware SerDes receivers support a wide range of Input Data formats
  - >50% of FPGA resources remain available for User Firmware after Gibraltar™ 4K Processing firmware integration
- **DDR4 SDRAM Memory**
  - 4x 16-bits @ 1,200 MHz DDR (153.6 Gbps)
- **4K Fusion DMD Interface**
  - 128-bits single-ended DDR Data plus Control
- **On-Board Flash Memory (FPGA configuration)**
- **Programmable Clock Generator (I2C)**
- **12V DC Power Input**

### Applications

The Gibraltar™ 4K HFR Formatter is the ideal solution for high-performance and specialized 1-chip and 3-chip DLP® projection systems:

- **Ultra-High Frame Rate (480 fps)**
- **Ultra-High Def (4K native / 8K dithered)**
- **Multi-stage High Dynamic Range (HDR)**
- **Multi-Viewer (2D / 3D Auto-Stereo)**
- **Flagship Home Theater**
- **Visualization / Simulation**
- **Enhanced Motion Rendition**
- **Virtual / Augmented Reality**
- **Structured Lighting**
- **UV Lithography**
- **3D Printing**

### Availability

The Gibraltar™ 4K UltraScale Formatter Design is available as a functionally tested PCB assembly (4K DMD not included). Each assembly includes a non-transferrable commercial use license for the embedded Gibraltar™ Processing technology.

Please **Contact Us** for more information.

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