**PRODUCT OVERVIEW**

The Marvell® 3D printer development kit is a complete hardware and software platform to support the design of production ready 3D printer systems built around the 88PA6120 system on a chip. The comprehensive hardware development platform has support for multiple print mechanisms and technologies as well as a robust set of user interfaces enabling system vendors to evaluate many possible solutions. The hardware development kit contains schematics, board layout files and bill of materials to enable engineers to quickly modify the electronics to fit the individual needs of the 3D printer in design. Full Linux-based SDK enables 3D printing functionality as well as robust volume proven user interfaces and network connectivity with all source code reducing the customer development effort and time to market.

At the core of the reference platform is the Marvell 88PA6120 which integrates a powerful 533MHz ARM v7 compatible processor to handle all the application processing requirements. The 88PA6120 augments the main processor with a direct engine control interface supporting highly integrated real time motion control of 3D print mechanisms and print output thereby reducing overall system cost.

The 88PA6120 integrates many system interfaces including a USB 2.0 device, USB 2.0 host and a dual mode USB 2.0 interface, a complete 10/100 (Fast Ethernet) solution with integrated PHY, and dual SDIO interfaces for memory card and Marvell Wi-Fi solutions. In addition 88PA6120 integrates support for a number of different serial peripheral interfaces including SPI, 16550-compatible UARTs, and I2C for Bluetooth. User interfaces are supported by an integrated LCD controller and multiple GPIO.

**Fig 1. 3D Printer Hardware Reference Kit Block Diagram**

**Fig 2. 3D Printer Software Development Kit**

<table>
<thead>
<tr>
<th>Linux I/O Drivers:</th>
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<tr>
<td>USB</td>
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<tr>
<td>Serial</td>
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<tr>
<td>eNET Stack</td>
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<tr>
<td>eMMC, SDIO</td>
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<tr>
<td>I2C</td>
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<tr>
<td>WiFi</td>
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**User Space**

- Universal Print Support
- Dual uP Real-time engines
- Custom Print Pipe

**Linux 3.14 Kernal**

**uBoot (Multi-source booting)**
FEATURES

High Performance SOC
- Marvell 88PA6120 with 533MHz ARM v7-compatible processor and separate real-time processors for motor control
- µSD card slot
- 512 Mb to 2Gb DDR2-800

Broad Mechanism Support
- Up to 7 Bipolar Stepper Drive (4 simultaneously)
- Up to 8 DC Motors (5 simultaneously) with quadrature encoder feedback
- Four extruder heaters plus 1 heated build plate
- Support for 3 limit switches and 4 thermal feedback ports
- Support for 2 DC Fans
- 20-24V Supply
- UPC Expansion for Inkjet/Piezo-based technologies

Materials
- Ensures authentic materials with connectors for up to four 88PA800 security chips

Support For Rich User-Interfaces
- Parallel control panel/display
- Parallel-to-MIPI DSI converter

FEATURES AND BENEFITS

<table>
<thead>
<tr>
<th>SPECIAL FEATURES</th>
<th>BENEFITS</th>
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<tr>
<td>Comprehensive support for 3D printer mechanisms and connectivity options</td>
<td>Flexible usage of the development environment enables evaluation of a broad range of product features and 3D print technologies.</td>
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<td>USB Camera, remote status and embedded web services</td>
<td>Shortens time for final production and reduces development risk</td>
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<td>Access to schematics and layout files</td>
<td>Open environment for integration of 3D printer technologies.</td>
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<td>Linux OS</td>
<td>Access to comprehensive knowledge and tools base.</td>
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<td>Full set of integration libraries provided in source code</td>
<td>Easy integration to 3D printer mechanisms, system control and communication interfaces for reduced time to market.</td>
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APPLICATIONS
- Consumer and industrial 3D printers

THE MARVELL ADVANTAGE: Marvell chipsets come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

ABOUT MARVELL: Marvell (NASDAQ: MRVL) is a global leader in providing complete silicon solutions and Kinoma software enabling the “Smart Life and Smart Lifestyle.” From mobile communications to storage, Internet of Things (IoT), cloud infrastructure, digital entertainment and in-home content delivery, Marvell’s diverse product portfolio aligns complete platform designs with industry-leading performance, security, reliability and efficiency. At the core of the world’s most powerful consumer, network and enterprise systems, Marvell empowers partners and their customers to always stand at the forefront of innovation, performance and mass appeal. By providing people around the world with mobility and ease of access to services adding value to their social, private and work lives, Marvell is committed to enhancing the human experience. As used herein, the term “Marvell” refers to Marvell Technology Group Ltd. and its subsidiaries.

CONTACT US: For additional information, please visit our website at www.marvell.com for a Marvell sales office or representative in your area.