# Device Solutions Ltd Product Information

# Opal i.MX53 CPU Module

<table>
<tr><td>Product Name</td><td>Opal i.MX53 CPU Module</td></tr>
<tr><td>Web Page</td><td>Devicesolutions.net/OpalModule</td></tr>
<tr><td>Part Numbers</td><td>Opal-CN-53X-RRR-FFF-T-V<br><br>
<table>
<tr><td>X</td><td>i.MX53 CPU variant</td><td>4: i.MX534 (800MHz Automotive – no video codecs)<br>5: i.MX535 (1.2GHz Consumer )<br>6: i.MX536 (800MHz, Automotive – full feature set)<br>7: i.MX537 (800MHz, Industrial – full feature set)</td></tr>
<tr><td>RRR</td><td>RAM</td><td>512MB: 512Mbytes DDR3<br>1GB: 1Gbyte DDR3</td></tr>
<tr><td>FFF</td><td>NAND Flash size</td><td>0: No flash fitted (boot from SD)<br>512MB: 512MBytes<br>1GB: 1GBytes<br>2GB: 2GBytes<br>4GB: 4GBytes</td></tr>
<tr><td>T</td><td>Temperature rating</td><td>I:- -40 to 85C<br>C: 0 to 70C</td></tr>
<tr><td>V</td><td>Version</td><td>1.0: First production release</td></tr>
</table>
<br>Standard part number: Opal-CN-537-1GB-512MB-C-1.0<br>Other options available on request with minimum order quantity of 100pcs.</td></tr>
<tr><td>Overview<br>(31 Words)</td><td>The Opal i.MX53 CPU Module integrates a Freescale i.MX53 processor, memory and power supply components. Using Opal reduces development time and cost for companies developing high-end industrial, medical and automotive devices.</td></tr>
<tr><td>Short Description<br>(76 Words)</td><td>The Opal i.MX53 CPU Module integrates a Freescale i.MX53 processor, memory and power supply components. Using Opal reduces development time and cost for companies developing high-end industrial, medical and automotive devices.<br>Opal gives you features including:<br>- 800MHz+ Cortex A-8 processor with 1GByte DDR3 RAM<br>- Multiple display interfaces,<br>- Accelerated video and 2D/3D graphics<br>- 10/100 Ethernet</td></tr>
</table>

| | |
|---|---|
| | - High-speed USB<br>- CAN Bus<br>Operating system support includes Windows Embedded Compact 7, Linux and Android 4. |
| **Long Description** | Create powerful connected devices faster with the Opal i.MX53 CPU module<br><br>**Reduce Development Time and Cost**<br>**Focus on your product, and not on complex processor design**<br>When you start a project using Opal, you eliminate a big piece of complex and risky design work. There is no memory interfacing or power supply design work to be done. You can also forget about having to lay out multi-layer boards with several BGA chips; that work is done too and it's all packaged into a module that is easy to integrate into your final design.<br><br>**Start writing your application, and not porting an Operating System**<br>Don't spend time writing low-level C and assembly code, or spending hours bringing up your prototypes. Opal runs Windows Embedded Compact 7, Android and Linux. Choose the OS you need, the tools you know, and get to work on the features your customers are looking for.<br><br>**Get started on real hardware**<br>The Opal Development Kit provides a platform for evaluation and prototyping of new designs. Common features are available on the board and expansion connectors make it easy to add application specific components.<br><br>**Powerful Multimedia Features**<br><br>**Multiple display options**<br>Opal interfaces directly with RGB and LVDS panels, and analog VGA displays. Two of these interfaces may be used simultaneously.<br><br>**Video and Graphics acceleration**<br>Opal includes video and graphics acceleration hardware enabling full HD video playback and stunning user interfaces.<br><br>**Highly Integrated - for a Faster Design Cycle**<br><br>**Connectivity**<br>Opal is not just about multimedia. It has connectivity options including Ethernet, serial and CAN, enabling connected industrial and automotive devices.<br><br>**Storage**<br>NAND Flash, USB, SD and SATA interfaces are included to enable permanent and removable storage of any size. |
| **Applications** | • Human Machine Interface (HMI)<br>• Medical Devices<br>• Factory Automation<br>• Building and Home Automation |

 

| | |
|---|---|
| | • Automotive Displays<br>• Point-of-Sale Kiosks<br>• Retail Displays |
| **Technical Specifications** | **Core**<br>• Freescale i.MX53 applications processor including Cortex-A8 core at 800MHz+<br>• 512MBytes or 1GByte DDR3 RAM<br>• 512MBytes+ NAND Flash<br>• Power Management IC with battery charger<br>• Voltage input - run off USB or Li-ion battery<br><br>**Hardware Acceleration**<br>• Video and Image Processing (Full HD 1920x1080)<br>• 2D/3D Graphics (DirectDraw,Direct3D Mobile, OpenGL-ES, OpenVG)<br>• Security<br><br>**Connectivity**<br>• 10/100 Ethernet (PHY included on Opal CPU)<br>• 2 x FlexCAN<br>• High-Speed USB Host & OTG<br>• SATA-II<br>• 4 x SD/SDIO/MMC<br>• 3 x I2C/AC97 for audio<br>• 5 x UART<br>• Configurable SPI<br>• I2C<br>• One-Wire<br>• 3 x 10-bit ADC<br>• 3.3V General Purpose I/O<br><br>**Graphics and User Interface**<br>• 5 display interfaces with up to 2 active at any one time. 180Mpixels/second at 24bit/pixel.<br>• Interface to RGB and LVDS TFT panels<br>• Analog VGA output<br>• 2 x camera sensor inputs<br>• Resistive touch screen controller<br>• Keypad controller<br><br>**Operating System Support**<br>• Microsoft Windows® Embedded Compact 7 supported by GuruCE<br>• Android™ and Linux supported by TrygTech |
| **Product Images** | https://dl.dropbox.com/u/4284897/ProductPhotos/OpalImages.zip<br>This includes high-resolutions images of:<br>• Opal CPU Module (Top, Bottom and block diagram)<br>• Opal Development Kit (Top, Bottom and block diagram) |

 