

www.lumendigital.com

Lumen Digital Corporation

**"Technical Experts
dedicated to your Success"**

Houston Experts Center

12670 Goar RD
Houston, TX 77077

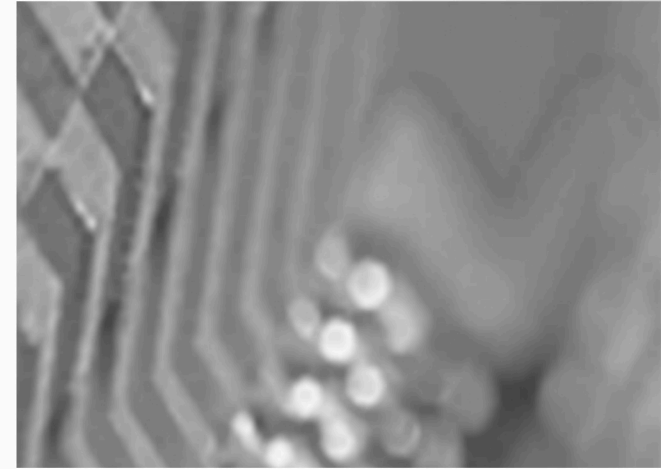
Houston Manufacturing Center

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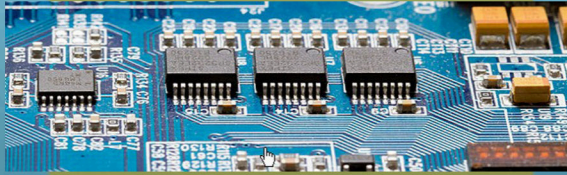
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LUMEN DIGITAL

**Design
SERVICES**



Design Services

Many clients come to Lumen with technical challenges that require high-value high-technology solutions. Lumen develops products, from A to Z, starting with simple requirements

Before designing, Lumen agrees with client on the project scope and scale, and high-level requirements

Lumen proposes a series of phases to reduce the risks and show progress during the development

Capabilities

Electronics

- * **CAD:** Schematic and PCB (PowerLogic, DX Designer and PADS PCB from Mentor Graphics)
- * Simulation with Pspice and Matlab/Simulink
- * **Digital Electronics:** FPGA design (Verilog or VHDL), combinatory and sequential logic, asynchronous/synchronous logic, digital filtering, ARM, DSPs, Media Processor, Microcontroller, DDR, DDR2, DDR3, SRAM, NOR flash, NAND Flash, SD Card, μ SD, SATA
- * **Analog Electronics** (amplifier, active and passive filters, comparators, power regulators, sensor signal conditioning, audio signals, video signals, HF design, power supplies, power conditioning)
- * **Video:** VGA, HDMI, DVI, Display Port, 1080P, 720P, D1, Composite, Component, Digitizers, Acquisition
- * **Communication:** RS232, RS485/422, CAN, Ethernet, USB, SPI, I2C, Serdes, McBSP, USB

* **Sensors:** Current, voltage, power, accelerometer, Magnetometer, gyrometer, pressure, humidity, temperature, flow, level, proximity, distance...

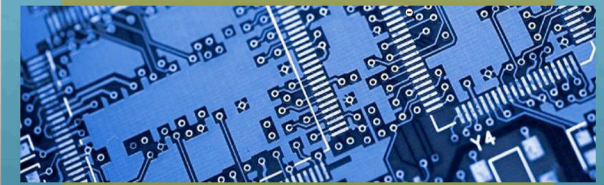
* **Energy:** Solar panel, Wind turbine, battery charger

Firmware

- * **Languages:** C, C++, C#, Java, assembly languages
- * **OS:** standard scheduler, BIOS (TI), Embedded Linux, Win CE/EC, VxWorks, Android
- * **Controllers:** C167, Coldfire, 68K, XC12, dsPic, Pic, 8051, ARM9, ARM Cortex, TM4C, TMS470/570
- * **DSP:** TI DSP (L138, 6000, 2800, 5500, Keystone), TI DaVinci (DM365, DM8168), ADSP
- * **Special Technology:** Streaming Video, GStreamer, RTSP, RTP, H264, H265, mpeg4/2 decoder, automatic control, Kalman filtering, Image and Video Processing, Artificial Intelligence
- * **Embedded Development Tools:** Code Composer Studio (TI), CodeWarrior (Freescale), Keil, MontaVista, VxWorks, Eclipse, MPLAB, Visual Studio
- * **Platform:** Beaglebone, Arduino

Communications

- * **Communication:** Sat, Cell, WiMax, Router, Wifi, Bridge, Low Range WAN, Ethernet, Serial, CAN
- * Cell modem, Local modem, phone modem
- * **Protocols:** standard TCP/IP stack (HTTP, FTP), UDP, CanOpen, Can-SDS, J1939, Modbus, Modbus TCP, EtherCAT
- * **Modulations:** PSK, QPSK, FSK, OFDM, AM, FM, ADSL



IT, Web & Software

- * **Cloud:** Azure, AWS
- * **Platform/Technologies:** LAMP (Linux, Apache, MySQL, PHP), Ajax, CGI, Socket, thttp, Joomla
- * **Data Base:** SQL, MySQL, Storage Procedure
- * **Presentation:** Power BI
- * **Language:** C#, .Net VB, C++, C, Java, PHP, HTML, Javascript
- * **Server/Client:** HTTP, RTSP, RTP, FTP
- * **Development Kit:** Visual Studio (Microsoft), Java Development Kit, Code Sourcery G++, Qt

Power Electricity & Automatic Control

- * Power input conditioning (filtering, Surge Protection); Power conversion: linear or switching AC/DC and DC/DC; Power Factor correction
- * Electrical Motor control design (simulation Matlab/Simulink): Vector, Direct Torque & Scalar
- * Electrical Motor (AC, BLDC, DC, Stepper motor)
- * Analog and digital closed loop (with Matlab/Simulink) with accelerometer, speed, position and feedbacks
- * Non-linear automatic control and statistical automatic control (Bang-Bang, Kalman, ARMA)

Mechanical

- * **CAD:** 3D design (Solidworks), Autocad
- * **Calculation & Analysis:** Stress, Heat Transfer, Hydraulic power system, vibration (resonance)