

# JOHN W. CHILDERS, CID

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## PCB DESIGNER

**An experienced, detail-oriented Printed Circuit Board Designer who lives by his motto:  
"Create a perfect duplicate of the engineer's intentions."**

## SUMMARY

Possesses twenty-three years experience in printed circuit board layout running a design service bureau. Product development and business-to-business sales. Knowledgeable in many electronic technologies. Works well with team members. Commands proficient communication skills. Will listen to directions and follow them to the letter.

## AREAS OF PCB LAYOUT and RELATED EXPERTISE

PCB Design using Altium Designer	Assembly Drawings	Manufacturing Outputs
Schematic Capture using Altium Designer	PCB Design Supervision	Manufacturing Procurement

## PROFESSIONAL EXPERIENCE with SELECT CUSTOMERS

All of this work was done with Altium Designer as an independent contractor . The following represent the largest PCB design contracts with about one third of the customers over the past 12 years.

### **LDG Electronics. Jun 2017 – Present**

- **Automatic Antenna Tuners for Amateur Radion**

- 5 boards, mostly analog, 2-layers. In addition to PCB layout and schematic capture:
- 3D modeling of case using Altium Designer's real-time clearance checking in three dimensions.
  - Ribbon cable assembly

### **Lockstate. Sep 2014 – Oct 2017**

- **IoT Exterior Door Locks**

- Combination locks for condos reprogrammable via the Internet. 16 boards, mixed analog and digital, 4-6 layers.
- Controlled depth laser drilling on one board to allow breakout of micro-BGA (0.5 mm ball pitch).

- **Motor Controller Flight Board**

### **Honeybee Robotics. Dec 2016 – Jun 2017**

- **Motor Controller Flight Board**

1 board with mixed analog and digital, 8 layers.

### **Aerojet Rocketdyne. Mar - May 2014 and Nov 2014 to Aug 2015**

- **Space craft drive controls for ion propulsion thruster technologies.**

- 6 boards with analog and a couple with high-voltage, up to 10 layers:
- 4000 Volt in multiple layers maximum creepage rules for one of these boards and 500 Volt for another.
  - 3D vertical and horizontal clearance rules using accurate 3D bodies and simulating the enclosure and adjacent boards in 3D.

### **RT Logic subsidiary of Integral Systems Sep 2002 to Feb 2010**

- **International Space Station telemetry :** "Crypto" board for telemetry data from space station. In service since 2003 with no hardware failures.
- Video data processing.
- Signal conversion projects, including legacy systems data converted to modern system. Layout technologies used (if not already mentioned above):
  - Skew control added to control of differential impedance over groups of low-voltage differential signals

(LVDS) which involved matched-length design rules with daisy-chained routes extended over multiple components in series.

- **RF Analog signal processing and conditioning project.**
- **Space Shuttle to ground-facility telemetry communications interface.**

#### **Tel Instruments Electronics Mar 2014 to July 2017**

- **Radio testing equipment.**  
12 boards RF analog and mixed analog and digital, 2-12 layers:
  - RF frequencies to 12 GHz

#### **Cottonwood Creek Technology, Inc. Sep 2011 to Oct 2017**

- **Telephone with touchscreen and micro-cameras:** A durable system for monitoring prison inmates' external calls.  
7 boards mixed analog and digital, 4-6 layers, AC/DC, 3 switching regulators (switching frequencies 250-1500 kHz), digital 100 MHz ARM. Layout technologies used:
  - Switching power supplies,
  - 1500-volt maximum creepage rules dividing a board into two sections,
  - 1 mm-pitch BGA,
  - differential pairs routing and
  - 3D vertical and horizontal clearance rules using accurate 3D bodies and simulating the enclosure and adjacent boards in 3D.

#### **Design Group Circuit Design / Piranha PCB Design July 2009 to Oct 2012**

- **Laser-based alignment system for use in outer space.**  
Mixed analog and digital, 8 layers. Layout technologies used (if not already mentioned above):
  - Op amp layouts minimizing input net trace lengths,
  - Copper designed into TO-3 op-amp footprints to match areas of contact with steel brackets, thus preventing traces from being routed under metal.
- **Biochemical diagnosis system for BiOptix Diagnostics, Inc.**  
Mixed analog and digital, 4 layers, 5 switching regulators (switching frequencies 500-1250 kHz), digital with 18MHz clock. Layout technologies used (if not already mentioned above):
  - Careful control by trace widths of temperature rise and voltage drop on power supply distribution.
- **Vascular surgery simulation system for Medical Simulation Corporation.**  
5 boards. mixed analog and digital, 2-4 layers. (Examples of a portion of this layout are available online by request.) Layout technologies used (if not already mentioned above):
  - Double-track routing between connector pins.
  - Placement of sensor for interaction with external moving object.
- **High-output LED and related boards for TerraLUX Inc.**  
Mixed analog and digital, 4 layers, 5 switching regulators (switching frequencies 500-1250 kHz), digital with 18MHz clock. Layout technologies used (if not already mentioned above):
  - Maximizing copper for high current and heat dissipation.
  - Conversion of Gerber files to Altium Designer .PcbDoc files.

#### **Colorado Power Electronics May 2012 to July 2012**

- **Flight-ready switching power supplies for NASA:** Boost Converter (64 amps/800 volts multilayer) and Buck Converter (64 amps/300 volts multilayer)  
Mixed analog and digital, 4-6 layer.

#### **Boulder Systems Design Oct 2011 to Jan 2012**

- **Martian Atmosphere Acoustic Anemometer** to operate in low-density atmosphere of Mars for possible future exploration of that planet.  
Two boards, mixed analog and digital, both 6 layer.

#### **Nexergy (née AVT ElectriTek) Jan 2005 to Feb 2008**

- Over 30 board designs - Smart Battery Chargers and related boards for a dozen organizations including GE, Layer 3 Communications, Sanmina, Sun StorageTek and US military.

Layout technologies used (if not already mentioned above):

- AC current and transformers
- Various custom batteries

**Welkin Sciences, LLC June 2007 to Oct 2007**

- Strategic electronic warfare application: Simulating robust continuity of radio communication during nuclear blast electromagnetic interference.

**CAREER ACHIEVEMENTS**

- Started a business with a \$5,000 investment and made it successful.
- Built Internet marketing techniques into web site design and maintenance that generates a continuous flow of prospects.
- Obtained new business prospects and clients continually while providing existing clients with excellent service.
- Developed electronic products: Negotiated contracts; managed electrical engineers and contract manufacturing vendors.
- Developed new, more reliable methods in printed circuit design and established a training Web site to instruct others.
- Developed and simplified printed circuit design procedures, eliminating errors while speeding turnaround.
- Increased a mining and processing crew's production by \$250,000 per year.

**PROFESSIONAL PROFILE**

- Oversaw strategic planning, marketing, sales, production, quality control and customer service for a business.
- Helped develop electronic products from concept through electrical and mechanical engineering, CAD design and manufacturing, finding ways to streamline the process from the viewpoint of PCB design.
- Learned HTML and designed an interactive web site geared for marketing result.:  
<http://www.GoldenGateGraphics.com>
- Supervised mining operations, repair of equipment and employees.
- Managed the marketing, sales and delivery of tutoring and other educational programs.
- Taught reading, communication and study skills to children of various ages.
- **Assisted in mine planning, ore reserve studies and feasibility studies as an engineer.**

**EDUCATION**

**CID—Certified Interconnect Designer**, IPC (Association Connecting Electronics Industries) March 12, 2016  
Bachelor of Science, Mining Engineering, Colorado School of Mines  
Bachelor of Science, Biology, Southern Colorado State College  
Have studied in many fields including sales, investing, Internet marketing, PCB design and electronics manufacturing.

**WILLING TO TRAVEL—REFERENCES AVAILABLE UPON REQUEST**

**WORK HISTORY**

Owner	Golden Gate Graphics	1990—Present
Independent Designer	Golden Circuits	1987-1989
Foreman	Zephyr Rock and Lime	1986
Principal	Various Business Ventures	1983-1986
Foreman and Geologist	Mobil Chemical	1981-1983
Mining Engineer	John T. Boyd Company	1978-1981

**BUSINESS SOFTWARE EXPERTISE**

Microsoft Office - Excel, Word, Outlook, PowerPoint and Publisher

OpenOffice.org - Calc and Writer

Quickbooks Pro

Adobe - Acrobat and InDesign

## PCB DESIGN SOFTWARE EXPERTISE

**Created printed circuit board layouts, drafted schematics, cable assemblies** and mechanical drawings with **Altium Designer**. Done simple parametric modeling using FreeCAD.

More information on PCB Design Expertise is available at

[http://www.goldengategraphics.com/ee\\_intro.php](http://www.goldengategraphics.com/ee_intro.php)

Example boards at <http://www.goldengategraphics.com/example-PCBs.php> and  
3D Modeling of PCBs at <http://www.goldengategraphics.com/example-PCBs/3D/index.php>

Can quickly learn new software systems as demonstrated by the wide variety of CAD and CAM systems mastered. Have used many other software packages and prefer Altium Designer to these:

PADS (now Mentor) Power  
PCB

PADS Power Logic

Cadstar

PCAD

PADS Logic

Orcad Schematics and PCB