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SKILLS

ANALOG DESIGN

Designed with op-amps, analog and switched capacitor filters, multiplexers, A/D, D/A, sample & hold, phase locked loops, analog signal processing functions, bipolar transistors, FETs, TRIACs, IGBTs, transformers, opto isolators, input and output power noise filters, differential receivers and transmitters, box and system cabling. Designed linear, capacitor and switching power supplies, power supply protection circuitry, PWM current regulator, thermistor interface, 277V AC SSR.

DIGITAL DESIGN

Designed micro based controllers interfacing to RS-232, RS-485, I²C, SPI and CAN. Used a number of 8 and 16 bit micros. Majority PIC or PSoC. Designed using DMA, interrupts, co-processors, DRAMs, SRAMs, dual port RAMs, EPROMs, EEPROMs, FLASH, boundary scan self test, state machines, look up tables, arithmetic circuits, TTL, CMOS, ECL, GaAs.

PRODUCT / BOX DESIGN

Designs included power supplies, controllers, analog and digital switching and signal processing. Determined specifications appropriate to customer needs, made noise budget, tested and met goals. Supervised shock, vibration, EMI radiation and susceptibility tests. Designed light dimming control systems, closed loop controllers, micro based machine controllers, hydraulic valve drivers, turn signal timers, no touch soap dispensers, model railroad turnout controller and variable speed train controller. Determined product requirements, designed the hardware, supervised the programming, PC layout and mechanical design. Have written specifications, test procedures, marketing blurbs, order guides, hardware user's manuals and application notes, provided customer support in person, by phone and by building a web site. Helped obtain UL and FCC approvals. Primarily use OrCAD for schematic capture.

SOFTWARE

Wrote firmware in C and subroutines and small programs in a number of assembly languages. Implemented unit setup algorithms in LabVIEW. Wrote Pascal programs to simulate hardware, test design approaches and generate PROM based lookup tables and state machines. Use Excel for numerical analysis hardware simulations. Determined algorithms, wrote flow charts, helped with self test, and I/O drivers. Found innumerable software bugs during product testing. Use DOS and windows. Have tools to program and debug PIC microprocessors in C and assembly.

PSoC System on a Chip Design

I am a Cypress MicroSystems CYPros certified PSoC consultant. PSoC is an 8 bit micro with on the fly reconfigurable analog and digital building blocks. Have hardware and software PSoC development tools. Programmed PSoC microcontrollers in C and Assembly language. Designed PSoC based products using on chip UART, A/D, PWM, timers, comparator and amplifier. Wrote software PLL to synchronize to the AC line, hardware/software AC phase cut dimmer.

Lighting Control Design

The PCC system allows cost effective and reliable retrofitting of 0 to 10V controlled dimming fluorescent ballasts without new wiring. Helped invent the PCC signaling concept and designed the coding protocol. Designed the PCC Encoder and PCC decoder hardware and firmware. Specified the user interface and developed the communication protocol between the PC and the PCC Encoder. Embedded an off the shelf Bluetooth module into the PCC Encoder. PCC Encoder includes lighting branch current measurement circuitry. Made power quality and efficiency measurement to validate system design. Provided documentation to the customer for the hardware, firmware and system performance. See customer's write-up

http://www.archenergy.com/lrp/demandresp_lighting/deliverable_3.1.7c_retroft_fluor_dim_overview.pdf

Designed inexpensive 0 to 10V isolated front end for an existing ballast. Step dimming interfaces for 0 to 10V ballasts and a retrofit to allow step dimming non dimmable instant start ballasts. Hardware and firmware for step dimming controller with pushbutton interface. Occupancy sensor fader for 0 to 10V ballasts. Demonstrated HPS dimming technique.

1-Wire Design

Designed a 1-Wire controlled AC switch, half and full duplex 485 to 1-Wire converters. 1-Wire pot embedded dimming front end with on/off control for existing ballast, was able to over come the ballast's high noise level with 1-Wire to half duplex 485 conversion technology.

EMPLOYMENT HISTORY

September 2002 - present: Consultant and president of NEV Electronics LLC. As NEV I can call on and manage the services of a number of other consultants and design services that I work closely with on an ongoing basis to provide turnkey engineering and product solutions.

Clients include Dust, High Country Tek, LBNL, Luminoptics, Philips and Vistron.

2001 - 2002: 2Wire, Inc. Senior Electronics Engineer.

1993 - 2001: High Country Tek. Senior Electronics Engineer.

1983 - 1993: Electronic Support Systems, Inc. Senior Electronics Engineer.

EDUCATION

Masters level, part time, 7 classes to enhance skills used on the job.

Santa Clara University, Santa Clara, CA. January 1985 - June 1988.

Bachelor of Science, Electrical and Computer Engineering.

University of California, Davis, CA. June 1983.