PAUL MATEER

Aurora, IL | (630)418-9918 | paul.aa9gg@gmail.com | Amateur Radio: AA9GG

PROFESSIONAL SUMMARY

Senior Embedded Systems and Hardware Engineer with 40 years of experience designing, programming, troubleshooting, and bringing electronic products from concept to high-volume production. Deep expertise in bare-metal firmware, 8-bit microcontrollers, analog/digital circuit design, PCB layout, and real-time sensor integration. Proven ability to modernize legacy systems, solve difficult hardware/firmware problems, and deliver reliable products for industrial, medical, and consumer applications.

TECHNICAL SKILLS

• **Microcontrollers:** 8-bit MCU Design, AVR/Atmel (ATmega3290PV), Motorola 68HC11, Intel 8051.
• **Firmware & Software:** Bare-Metal C, Assembly, Embedded BASIC, Real-Time Systems, State Machines.
• **Hardware Design & ECAD:** Analog/Digital Circuit Design, Schematic Capture, PCB Layout (OrCAD 386+/DOSBox, FastCad).
• **Power, Signal & Validation:** Power and Signal Integrity, Sensor Interfaces, Oscilloscopes, Logic Analyzers, Prototype Validation.

PROFESSIONAL EXPERIENCE

ELAN ENGINEERING CORPORATION | Hinsdale, IL
Electronics Design Engineer | 1987 – Present *(Company closing January 1, 2027)*

- **Concept to Production**: Led hands-on, full-lifecycle engineering for complex electronic products, successfully transitioning 25+ internal design concepts into high-volume commercial production.
- **Good-Lite CSV Product Line:** Designed complete circuitry, firmware, and layout for standard CSV-1000, CSV-2000, and CSV-3000 high-efficiency light box systems. Reduced legacy power consumption by 30% while improving system responsiveness.
- **Good-Lite Wireless Modernization:** Reverse-engineered and re-architected legacy vision testing units into robust wireless systems (Instantline), extending product lifecycle by 15+ years.
- **Legacy Infrastructure Modernization:** Re-engineered the foundational Stranco REM-1 pump controller, migrating it from complex discrete logic to a highly integrated, programmable ATmega3290PV-10AU microcontroller platform (REM-1F).
- **High-Reliability PCB Design:** Designed robust, 6-layer PCBs for chemical metering systems, architecting strict layer stackups and plane splits in OrCAD 386+ (DOS/DOSBox) to isolate high-current paths and maximize noise immunity.
- **Real-Time Data Acquisition:** Developed the AquaTech logging system, integrating precision analog sensors with 8-bit microcontrollers and bitwise low-pass filtering to clear signal noise without computational overhead.
- **Bench Validation:** Isolated and resolved hardware-firmware timing anomalies, ground bounce, and bus conflicts on physical prototypes using oscilloscopes and logic analyzers.

APOLLO ELECTRONICS | Chicago, IL
Manager & Radio Technician | 1980 – 1984

- **RF Diagnostics:** Executed component-level diagnostics, RF calibration, and bench troubleshooting for commercial radio communications infrastructure and consumer transceiver equipment.
- **Operations:** Managed technical workflows, directed electronic component sourcing, and updated engineering documentation.

MILITARY SERVICE & EDUCATION

- **Avionic Communications Repairman** – **United States Army Reserve (1979 – 1985)**
  Calibrated and performed component-level troubleshooting on critical airborne radio, communication, and electronic navigation systems under rigid military specifications.
- **Electronic Technician Diploma** – **DeVry Institute of Technology (Lombard, IL)** | *Graduate: June 1987*