NICOLAS MAHECHA

ELECTRONIC ENGINEER | LOW-VOLTAGE SYSTEMS, BAS/SCADA & IOT INTEGRATION SPECIALIST

Kissimmee, FL | +1 (689) 249-0957 | **nicolasmelectronic@gmail.com** | **linkedin.com/in/nm85** | **nicolasmahecha.com**

PROFESSIONAL SUMMARY

Electronic Engineer with over 10 years of combined experience bridging commercial low-voltage systems integration, building automation (BAS/SCADA), and full-stack software/IoT engineering. Florida FASA/BASA Certified with hands-on field expertise in structured cabling (Cat6, MDF/IDF racks), security and access control configuration (DSC PowerSeries, DSC Neo, Honeywell Vista, Alarm.com smart automation), and fire alarm wiring fundamentals (SLC & NAC loops, addressable/conventional devices). Strong industrial networking background (CCNA concepts, VLANs, TCP/IP, Modbus RTU/TCP, BACnet, Ignition SCADA) combined with custom software development skills to optimize technical field operations.

CERTIFICATIONS & LICENSES

- **FASA/BASA Certification (Fire Alarm System Agent / Burglar Alarm System Agent)** – State of Florida (Active)
- **SCADA & IIoT Systems Integration Training** – Inductive Automation (Ignition Platform)
- **Driver's License** – Valid Florida License with Clean Driving Record

CORE SKILLS

Low-Voltage, Telecom & Field Systems: Structured Cabling (Cat6/Cat6A, 22/2, 22/4, FPLP/FPLR), MDF/IDF Closet Work, 19" Server Racks & Patch Panels (110/Keystone), Wire Pulling & Dressing, Blueprint & Single-Line Diagram Reading, Multimeter Diagnostics, Conduit Bending, NEC & TIA/EIA-568 Compliance.

Security, Access Control & Smart Automation: Alarm.com Ecosystem (Smart Automation & Z-Wave Integration), Intrusion Panels (DSC PowerSeries, DSC Neo, Honeywell Vista), Access Control Hardware (Maglocks, Electric Strikes, REX Devices, NO/NC Dry Contact Relays, Altronix Power Supplies), IP & Analog CCTV, Gate Operators, Intercoms.

Fire Alarm Fundamentals & Field Wiring: Fire-Rated Cable Pulling, SLC (Signaling Line Circuit) & NAC (Notification Appliance Circuit) Loops, EOL Resistors, Addressable vs. Conventional Device Installation, Field Diagnostics (Silent Knight, Honeywell).

Industrial Networking, BAS & SCADA: Ignition SCADA, Modbus RTU/TCP, BACnet, RS-485, MQTT, CCNA Routing & Switching Concepts, VLAN Configuration, TCP/IP Troubleshooting, PoE Switches.

Software, Cloud & Embedded Systems: Ruby on Rails, Python, SQL/PostgreSQL, C/C++, AWS Cloud Architecture, Embedded Microcontrollers (ESP32, Raspberry Pi, Microchip PIC), IoT Telemetry & Dashboards.

WORK EXPERIENCE

Alarmtronics | Orlando, FL **Feb 2025 – Present**

Electronic Engineer & Low-Voltage Systems Technician (FASA/BASA)

- Execute commercial and residential low-voltage installations, structured cabling terminations, and hardware configurations for intrusion alarms (DSC Neo, PowerSeries, Honeywell) and access control systems (maglocks, strikes, relay logic, and power supplies).
- Configure and deploy **Alarm.com** interactive services and smart building automation modules, integrating Z-Wave peripherals (smart locks, commercial thermostats, lighting controls, and sensor triggers).
- Pull, route, dress, and terminate Cat6 networks (MDF/IDF racks, patch panels, PoE switches, IP CCTV cameras) and fire alarm circuits (SLC and NAC loops, conventional and addressable field devices) in strict compliance with NEC and TIA/EIA standards.
- Diagnose complex electrical, ground fault, and communication issues across field buses (RS-485, SLC loops, Ethernet) using multimeters, cable testers, wiring schematics, and architectural blueprints.
- Architected and deployed **OrdenApp** (Ruby on Rails 8, Hotwire, PostgreSQL), a proprietary field operations platform that reduced operational dispatch response times by ~25% and streamlined asset tracking across 100+ active field setups.

Freelance & Systems Consultant | Orlando, FL (Remote / Hybrid) **Jan 2018 – Feb 2025**

IoT, Automation & Full-Stack Software Engineer (Clients: Haneke Design, Samimetrics, Dipzo)

- Engineered end-to-end IoT telemetry, SCADA/HMI dashboards, and data acquisition solutions using Raspberry Pi and ESP32 microcontrollers for industrial and commercial monitoring panels.
- Developed full-stack web applications (Ruby on Rails, Python, PostgreSQL, AWS) to monitor connected field hardware and visualize real-time sensor metrics.
- Implemented backend APIs and industrial communication bridges (Modbus RTU/TCP, MQTT, REST) to connect physical sensors and controllers with cloud infrastructure.

ELCA Electronic Security | Buenos Aires, Argentina **May 2016 – Dec 2017**

Electronic Security & Low-Voltage Technician

- Performed commercial field wiring, device mounting, and circuit testing for intrusion alarm panels, access control doors, and peripheral fire detection devices.
- Executed line diagnostics, continuity testing, and EOL resistor verification to isolate circuit faults and minimize false alarm triggers.
- Built custom internal dispatch and route-tracking utilities to optimize field resource allocation for technical teams.

BlueBox Colombia | Bogotá, Colombia **Jan 2014 – Jan 2016**

Electronic Systems Integration Engineer

- Installed and programmed commercial and high-end residential building automation systems (Domotics/Inmotics) utilizing Control4 and Insteon protocols.
- Integrated IP CCTV networks, access control units, audio/video matrices, and smart HVAC controls with structured cabling and 19" equipment racks.

Powercol | Bogotá, Colombia **Jun 2012 – Dec 2013**

Embedded Systems Engineer (R&D)

- Developed and debugged embedded C/C++ firmware for Microchip PIC microcontrollers utilized in industrial power and control equipment.
- Designed, prototyped, and tested custom Printed Circuit Boards (PCBs) incorporating digital logic, analog sensors, and power regulation stages.

FEATURED TECHNICAL PROJECTS

- **OrdenApp (Enterprise Field Operations & Dispatch Platform):** Spearheaded the full-stack modernization using Ruby on Rails 8, Hotwire, Solid Queue, and AI-assisted workflows to streamline technician dispatching, tool allocation, and service coordination, boosting dispatch efficiency by 25%.
- **Autonomous Off-Grid Energy & Telemetry System:** Designed and wired a solar PV and battery management ecosystem using ESP32/Raspberry Pi, integrating field sensors via RS-485/Modbus RTU and MQTT brokers for real-time power and water telemetry.
- **Local Multi-Agent Automation Lab:** Orchestrated local AI agent workflows using OpenClaw and Ollama for automated testing, script execution, and task management.

EDUCATION

INSTITUTION & CREDENTIAL	PERIOD
Politécnico Grancolombiano | Bogotá, Colombia Postgraduate Specialization in Project Management & Business Intelligence *U.S. Credential Equivalency Verified by World Education Services (WES)*	2015 – 2016
Fundación Universidad Central | Bogotá, Colombia Bachelor of Science (B.S.) in Electronic Engineering *U.S. Credential Equivalency Evaluation via World Education Services (WES)*	2007 – 2011