

José Manuel Requena Plens

Firmware & Software Engineer

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On-site, remote or hybrid

Summary

Embedded firmware and software engineer with experience building industrial firmware for solar inverters (C, STM32, FreeRTOS) and a solid R&D background. Focused on low-level optimization, industrial communications (Modbus) and hardware test automation. I maintain *open source* projects used by developers worldwide. Targeting **firmware, software and QA** roles, bringing engineering rigor and a focus on quality.

Experience

R&D Software Developer

Apr 2023 - May 2026

Power Electronics — Solar + Storage

Lliria, Spain

- Reduced RTOS task stack usage by 30%–50%, optimizing memory on STM32 microcontrollers.
- Optimized Modbus TCP request handling, cutting CPU usage under load (40,000 req/s) from 80% to 17% with no dropped responses.
- Redesigned embedded file-system access, cutting access times by over 50%.
- Implemented a scheduled purge (daily/monthly) that safely clears thousands of files, preventing storage exhaustion under continuous operation.
- Built and maintained industrial communications in C with hardware abstraction layers (HAL): Modbus RTU/TCP, UART, I2C and SPI.
- Automated the test suite: ~50–80 unit tests per module (Ceedling, thousands in total) reaching 100% line and branch coverage via standard-library mocks/fakes, plus hundreds of on-hardware integration tests (pytest) — TCP/FTP performance and FTP security —; all in CI.
- Reviewed merge requests across a 12-person team, catching bugs and proposing improvements before integration.

Predoctoral researcher

Jul 2021 - Jul 2022

UPV · CSIC · i3M

Valencia, Spain

- Designed acoustic metamaterials (metadiffusers and lenses) that reduce the footprint of conventional diffusers, validated with MATLAB and COMSOL simulations.
- Manufactured and characterized prototypes; published results at international conferences (Euronoise, Tecniacústica).
- Supervised a Master's thesis in Acoustic Engineering (UPV), from research design to defense.

Researcher in European project

Feb 2020 - Jul 2021

UPV · European Space Agency (ESA) — IGIC

Gandia, Spain

- Designed and experimentally validated a noise-mitigation metamaterial for the VEGA rocket launch (ESA project AO/1-9479/18/NL/LvH), meeting 100% of project objectives with results accepted by ESA.
- Developed acoustic measurement software per ISO 10534-2 and ASTM 2611 ([A|Lab](#)) and a 3-axis robotic system for experimental measurements.
- Co-author of international publications/talks (Euronoise, ECSSMET).

Technical Skills

Embedded Firmware & Electronics: C, STM32 & ARM, ESP32 / ESP-IDF, PlatformIO, Texas Instruments, FreeRTOS / RTOS, Comm. Protocols, HW Debugging, Keil uVision, Instrumentation, Secure Boot & Embedded Security, Doxygen

Software Engineering & Tools: Python, C++, Go, TypeScript, Bash, Clang Tooling, Git, GitHub, GitLab, Docker, MATLAB, CMake, JetBrains Toolbox

Quality, CI/CD & DevSecOps: GitHub Actions, GitLab CI, Jenkins, SonarQube / SonarCloud, GoReleaser, Static Analysis & SAST, Testing, pre-commit hooks

Networking: TCP/IP & Networking, MikroTik RouterOS, WireGuard / VPN, IPv6 & Dual-stack, QUIC / HTTP3, DNS / Dynamic DNS

Security & Cryptography: Applied Cryptography, TLS / mTLS / PKI, Nginx Hardening, CrowdSec, Network Hardening

AI & Agentic Engineering: Model Context Protocol (MCP), AI Coding Agents, LLM Integration

Simulation & Acoustics: COMSOL Multiphysics, LabView, Acoustic Instrumentation

General & Platforms: Linux / Unix, MacOS, Windows, LaTeX, HTML / CSS

Open Source Projects

gitlab-mcp-server — Go · Model Context Protocol server

31 ★ · 38 releases · ~40k downloads · [Listed on Glama](#), [mcp.so](#), [Cursor](#) & [mcpservers.org](#)

Open-source GitLab MCP server that exposes 1,000+ GitLab operations to AI assistants through a dynamic 2-tool find/execute design, with stdio/HTTP/OAuth transports and safe & read-only modes.

phonometry — Python · DSP · Acoustics

108 ★ · 24 releases · [PyPI](#)

Acoustic measurement toolkit: fractional octave-band filter banks, A/C/Z and Fast/Slow/Impulse weighting, and sound level metrology (Leq, percentiles), conformance-tested against IEC 61260-1 and IEC 61672-1 class 1 tolerances. Formerly PyOctaveBand.

cs-routeros-bouncer — Go · Firewall · MikroTik · WAF

12 ★ · 14 releases · 321 downloads · [On the CrowdSec Hub](#)

CrowdSec bouncer for MikroTik RouterOS: feeds the collaborative IPS/WAF CrowdSec decisions into the RouterOS firewall (address lists) through its API, blocking malicious IPs in real time.

Cloudflare-DNS-Updater — Bash · DevOps

27 ★ · 6 releases · 52 downloads

Dynamic DNS client for Cloudflare (IPv4/IPv6) written in Bash, with a bats test suite and coverage reporting.

Education

PhD program in Health and Wellness Technologies (discontinued)

2019–2023

Polytechnic University of Valencia (i3M / UMIL)

Valencia, Spain

Research on acoustic metamaterials for medical imaging and ultrasound beam control (programme not completed; redirected to industrial software development).

Master's Degree in Acoustical Engineering

2019

Polytechnic University of Valencia (EPSG)

Gandia, Spain

Graduated with honors; Master's thesis awarded a special distinction.

Degree in Telecommunication Engineering in Sound and Image

2018

University of Alicante (EPS)

Alicante, Spain

Two specializations: Acoustic Engineering and Audiovisual Technology.

Higher Vocational Degree — Superior Sound Technician

2011

IES Luis García Berlanga

Alicante, Spain

Intermediate Vocational Degree — Electronics Technician

2009

IES Salesianos (San José Artesano)

Elche, Spain