

Solution name: FWAuto — Automated Firmware Workflow for Renesas RA8T2

FWAuto runs the full firmware development workflow and delivers verified results on real silicon — not just generated code.

Description

FWAuto is a firmware workflow automation platform that closes the compile → flash → verify → debug loop on the actual device. On the Renesas RA8T2 (Cortex-M85), natural-language prompts drive the entire pipeline. The end-to-end workflow is validated on the target device using hardware-in-the-loop evidence, rather than relying solely on simulation.

Supported Renesas products: RA8T2 (MCK-RA8T2, Cortex-M85) validated; architecture designed to extend to other RA, RZ, and RH850 projects, subject to project-specific validation.

Proven on RA8T2 — two validated workflows

A) Motor control · recorded demo - On launch, FWAuto auto-identifies the RA8T2 motor-control project. - config.toml wires the toolchain: e2 studio CLI (build), J-Link (flash), serial/ baud (logging). - Natural-language commands run the pipeline: build → deploy → log analysis, ending in a troubleshooting checklist. - Validation: the motor ramps smoothly to 1400 RPM via the Motor Control Dashboard. - Motor-control demo: View recorded demo	B) On-device TinyML · TFLite Micro on RA8T2 (Cortex-M85) - Five workflow stages, all passing: Bring-up · TFLM · Deploy · Verify · End-to-end. - Measured on the tested MCK-RA8T2: ~6 μs inference latency, 100% accuracy on the tested validation set. - Footprint: tensor arena at 18%, firmware ~5% of MRAM. - Pipeline: .tflite → C array → libtflm.a → build → flash to MRAM → RTT. - Engineering choices: Step-0 auto-detection, RTT in place of UART, DWT latency measurement, libtflm.a as a separate library.
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A) Motor-control recorded demo available at the link above. · B) TinyML documentation and validation logs available; recorded demo in preparation.

Key differentiator Toolchain-neutral by design — FWAuto integrates and closes the verify loop across eight adapter types (CLI, Serial, SCPI, DAP, API, SSH, Camera, MCP), spanning vendor SDKs, tools, and instruments. The same workflow is designed to extend to additional Renesas RA / RZ / RH850 projects, subject to project-specific validation. Verified outcomes on real hardware — not simulation — are the core of what we deliver.