

Emmetra

RZ Ecosystem Partner Solution Emmetra SW ISP Stack



Solution Summary

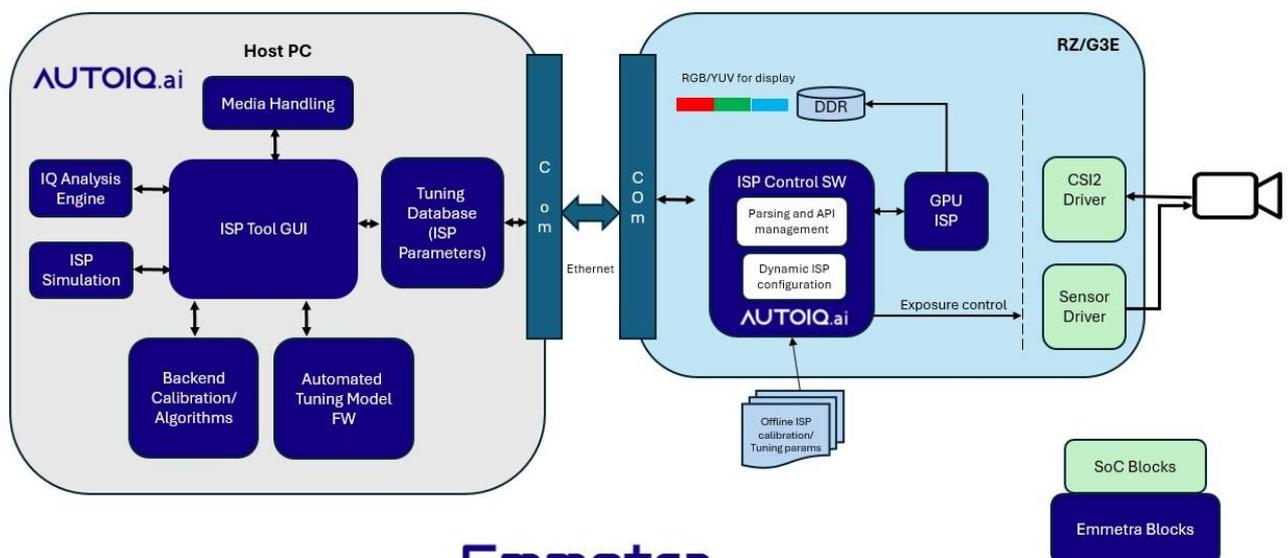
The **Emmetra SW ISP Package** is a high-performance, software-defined Image Signal Processing (ISP) suite specifically optimized for the **Renesas RZ/G3E** platform. Unlike standard software ISPs that tax the primary CPU, this package is uniquely engineered to run on the **RZ/G3E's integrated GPU (Arm Mali-G52)**. By offloading intensive imaging tasks to the GPU, the solution achieves professional-grade image quality for both Human Vision and Machine Vision while leaving the quad-core **Arm Cortex-A55** free for high-level HMI and edge AI applications.

Features/Benefits

- **GPU-Accelerated Imaging:** Leverages the RZ/G3E's 3D graphics engine to handle complex ISP pipelines with high efficiency and low latency using OpenCL.
- **ISP Algorithms** – Black level correction, Auto White Balance, Lens Shading Correction, Demosaicing, Color Correction, Contrast enhancement, Noise reduction, Sharpness enhancement, Auto exposure
- **Proven High-Resolution Throughput:** Delivers smooth, reliable video performance at **2MP @ 30fps (available) and 5MP @ 30f fps (in-progress)**
- **Sensors Agnostic:** Supports a vast array of MIPI-CSI2 camera sensors and lenses, providing OEMs total flexibility in hardware selection.
- **Automated IQ Tuning:** Seamlessly integrates with **AUTOIQ.ai** to automatically define and achieve target IQ metrics using agentic AI.
- **Simplified Metrics:** Provides real-time IQ feedback in an easy-to-interpret score (0-100), eliminating the need for expensive third-party benchmarking tools.

Diagrams/Graphics

AUTOIQ.ai Architecture



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[Website link for more info
https://www.emmetra.com](https://www.emmetra.com)

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Target Markets and Applications

- **Industrial HMI & PC:** High-performance touchscreens for industrial control and gateways.
- **Medical HMI:** High-definition diagnostic monitors and medical imaging systems.
- **Smart Retail & Office:** Intelligent kiosks, point-of-sale terminals, and office printers.
- **Security & Surveillance:** AI-driven surveillance hubs and smart doorbells.
- **Robotics & Drones:** Vision-guided automation and high-speed surveillance drones.

Services Included

Emmetra provides a full-stack engineering service to support your hardware integration:

- **Camera module Designs:** Compact camera module designs based on image sensors and lenses of OEMs choice based on the application.
- **Sensor, Optics, and ISP Calibration:** Precision tuning for superior image quality.
- **IQ Testing and Benchmarking:** Comprehensive validation at Emmetra's specialized Image Quality Lab.
- **Software Stack Development:** Integration of camera drivers development, integration and testing.
- **Custom Imaging Algorithms:** Custom optimization for specialized imaging requirements.

About Emmetra

Emmetra is a deep-tech AI company with a focus on automating the full-stack of Imaging and Vision applications. Founded by an expert team with rich global experience in developing camera products across the breadth of industry markets. Born with a first principles thinking to simplify the product development, Emmetra intends to eliminate the skill barriers and enable camera OEMs & ODMs to unleash creativity and focus on solving their customer problems.

Vision: Empower camera product companies to achieve perfect vision by unlocking the potential of cameras using Emmetra's AI based development tools

Mission: To disrupt the lengthy and costly development process of camera software and hardware combination stacks with an AI-driven solutions.

For more information, visit: www.emmetra.com