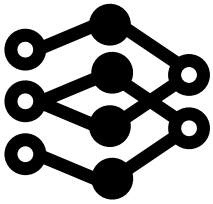
Market Leading Performance Dense Real-Time CPU

IMG RTXM-2200 is a highly scalable and configurable 32-bit real-time RISC-V CPU built to the highest industry quality standards with performance density as the key design goal. It marks the first step on Imagination's journey to deliver high-quality, market-disrupting levels of compute performance, through advanced heterogeneous compute solutions. Bringing together our system knowledge in GPU, AI, and Ethernet-based systems we deliver CPU solutions designed to address the needs of a diverse range of use cases.

Highest performance density

Built to highest industry quality standards

Highly configurable enabling flexibility across a wide range



Designed to enable market-leading heterogeneous AI solutions

Performance Density

With the key design goal of performance density, IMG RTXM-2200 delivers the industry a CPU that packs in huge performance in a very small area and low power envelope. IMG RTXM-2200 delivers over 25% higher performance density than the current widely adopted real-time CPU.

Quality

Our vision is for our CPUs to set the quality bar high for the RISC-V ecosystem. IMG RTXM-2200 has been built by a quality-driven team, across every aspect of the development lifecycle. We employ lean, efficient, and industry-proven development and testing methodologies with stringent sign-off criteria to ensure a world-class quality product.

Configurability

IMG RTXM-2200 is a highly configurable core and can be designed with L1 I/D cache sizes up to 128KB, I/D TCMs up to 128KB and PMP with up to 16 regions. The CPU also supports configurable extensions like single-precision floating-point (F) and BFloat16 for machine learning tasks. It also implements industry standard features like an interrupt controller, debug module and breakpoint triggers that can also be configured as the use case requires.

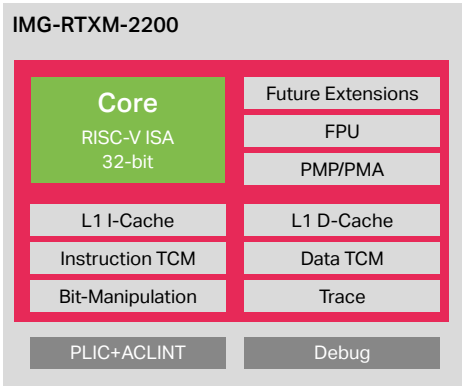
Software and Tools

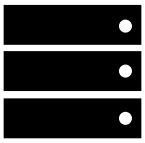
Catapult SDK delivers a complete solution for IMG RTXM-2200 including FreeRTOS support and a reference secure boot monitor. It is fully compatible with industry-standard tools like gcc, LLVM compilers, and gdb debugger. Our LLVM Compiler is optimized to deliver the maximum performant IMG-RTXM-2200.

Catapult Studio, the IDE, brings an enhanced user experience based on VS code. It is compatible with gem5 and is available for Windows, Ubuntu, CentOS and MacOS. The additional compelling features for software developers are:

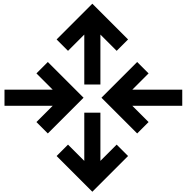
- Powerful system for generating linker scripts to ease code and data placement
- Management of platform-specific start-up code for different platforms
- Feature-rich embedded debugging views in the IDE

Use cases

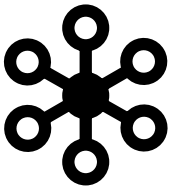




Storage Controllers

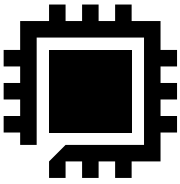


Packet Management



Networking

Base Stations



SoC Helper CPU

Smart Metering

Specification

Key Features	ISA	RISC-V
	Architecture	32 Bit
	Pipeline	11 Stage, Dual Issue
	Bus Interface	AXI4, 128 bits
	Security	PMP & Secure Boot Monitor
	PMP	Configurable up to 16 regions
	Interrupt Controller	Integrated, PLIC & ACLINT
	Debug	Supported (Configurable)
	Trace	e-Trace, (Configurable)
RISC-V Extensions	Base Extensions	IMAC (G)
	Floating Point	Single Precision Floating Point (F), (Configurable)
	BFloat16	Brain Floating Point (BF16), (Configurable) Enhanced support for AI use cases
	Bit Manipulation	(Zba, Zbb, Zbc), Delivers higher code density
	Zifencei	Fence.i instruction supported for synchronization
	Zicsr	Control Status Register instructions
Memory System	Instruction Cache	Configurable (16KB to 128KB)
	Data Cache	Configurable (16KB to 128KB)
	Instruction TCM	Configurable (0KB to 128KB) Enhanced deterministic execution
	Data TCM	Configurable (0KB to 128KB) Enhanced deterministic execution
	Interrupts	Configurable up to 256 interrupts
Software and Tools	Catapult SDK	gcc, LLVM, gdb support
	Catapult Studio	Visual Studio code-based IDE
	OS Support	Free RTOS
	Models	Functional model, Performance model
	Software	Reference secure boot monitor
	Development Platform	FPGA

Get in touch to speak to one of our CPU experts at imaginationtech.com/contact-us