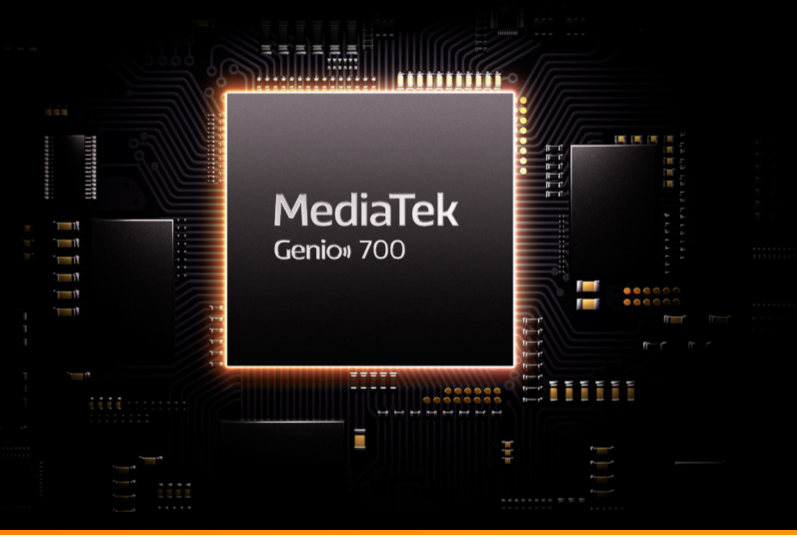
MediaTek Genio 700

Powering High-End IoT Applications with Rich Multimedia and Edge AI



Key Overview

The MediaTek Genio 700 is a high-performance, 6nm, edge AI platform for demanding IoT applications, that is pin-to-pin compatible with the mainstream Genio 510 platform, offering a seamless upgrade path. It provides a strong computing capability with an octa-core CPU cluster, consisting of 2x Arm Cortex-A78 performance cores, and 6x Arm Cortex-A55 efficiency cores; a high-performance Arm Mali G57 MC3 GPU, and an integrated 5th generation MediaTek NPU (Neural Processing Unit) capable of 4 TOPS for edge AI acceleration.

Rich multimedia applications are supported by a dual display capability, an integrated camera ISP supporting up to 32MP @ 30fps, 4K video decode/encode and an integrated HiFi 5 DSP for audio algorithm processing. It includes rich I/O capability of PCIe 2.0, multiple USB and GbE MAC, and multiple UART/I2C/SPI connections. Various wireless connectivity options support external combo chips and modules, including Wi-Fi 6 and Bluetooth 5 support. Android, IoT Yocto, and Ubuntu OS support provides developers with the flexibility to create scalable IoT and intelligent embedded solutions.

Target Applications

- Home automation & smart home hubs
- Smart retail kiosks
- AI-driven digital signage
- Industrial HMI
- Industrial edge AI devices
- Fleet & traffic management
- Smart parking & charging systems
- Enterprise video conferencing
- Multimedia streaming devices
- Healthcare & remote patient monitoring

Highlights

Power-Efficient Edge AI Platform

Built on TSMC's 6nm process, the platform features 2x Arm Cortex-A78 performance cores operating up to 2.2GHz, and 6x Arm Cortex-A55 efficiency cores at up to 2.0GHz. The Genio 700 delivers a computing performance boost for both single-core and multi-core operation compared to the Genio 510.

Advanced Multimedia and Graphics

Equipped with an Arm Mali-G57 MC3 GPU it offers a 50% boost in 3D graphics performance over the Genio 510. The Genio 700 supports up to dual 4K resolution displays (4K60 + 4K30). It also handles multi-camera configurations 16MP + 16MP @ 30fps, or single cameras up to 32MP at 30 fps for computer vision and AI applications. These make it ideal for high-resolution applications in smart displays, signage, and security applications.

Flexible and Scalable Platform – Pin Compatible with Genio 510

The Genio 700 is pin-compatible with the Genio 510, providing enhanced design flexibility. It also supports consumer & industrial temperature ranges, as well as a 10-year longevity guarantee, making it suitable for a variety of demanding environments.

Advanced AI and Neural Processing

The platform incorporates a MediaTek 5th generation NPU that can deliver up to 4.0 TOPS for edge AI acceleration. It also includes a Candence Tensilica VP6 Vision DSP. These enable real-time, low-latency AI inference at the edge for applications like object detection, image classification, and speech recognition, reducing reliance on cloud-based processing.

Enhanced Connectivity

Equipped with powerful interfaces like PCIe 2.0, USB 3.2/2.0, GbE MAC, and multiple UART/I2C/SPI connections, the Genio 700 allows for scalability and expansion to suit the needs of a wide array of IoT applications.

Multi-OS Support

With support for Android, IoT Yocto and Ubuntu operating systems and a rich ecosystem of partners, the Genio 700 can support a wide variety of applications & use-cases.

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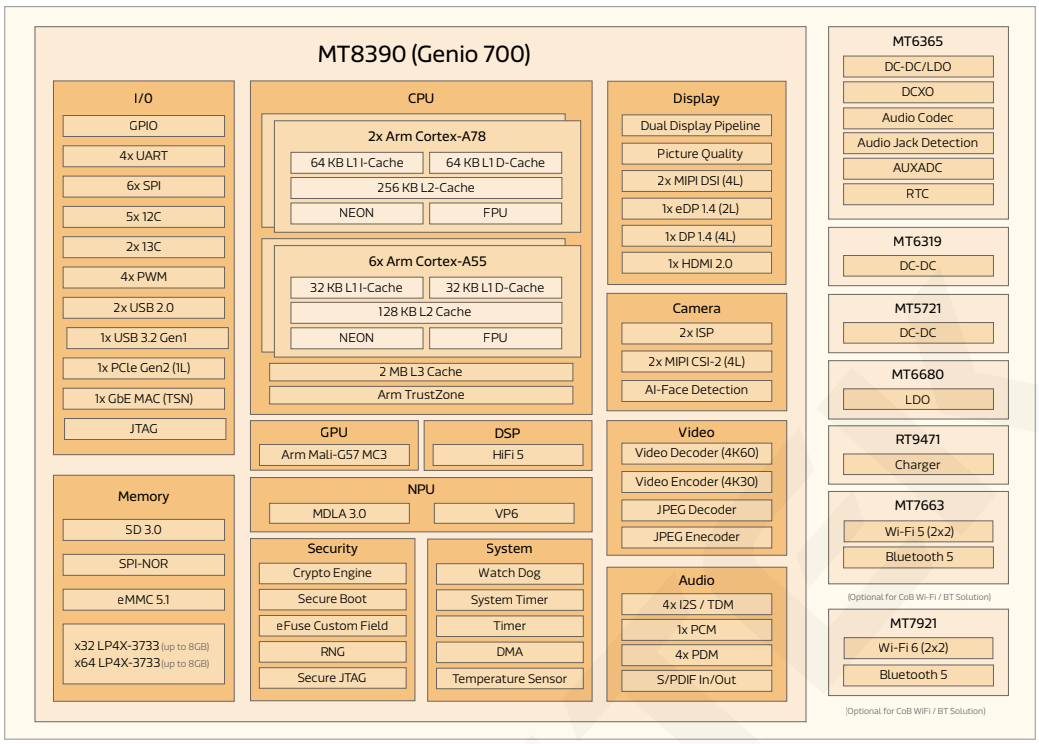
Block Diagram



Specifications

Processors	CPU	2xArm Cortex-A78 @ 2.2GHz 6xArm Cortex-A55 @ 2.0GHz
Memory & Storage	Memory Type & Speed	LPDDR4x up to 3733Mbps, up to 8GB
	Storage Type	eMMC 5.1 SD 3.0 SPI-NOR
AI	NPU	MediaTek 5th generation NPU (4.0 TOPS) Cadence Tensilica VP6 DSP
Graphics	GPU	Arm Mali-G57 MC3 Supports OpenGL, Vulkan, OpenCL
Display & Video	Display Support	Dual display (4K60 + 4K30) Single display (4K60)
	Video Encode	H.264/H.265 (4K30)
	Video Decode	H.264/H.265/AV1/VP9 (4K75) MPEG4/VP8 (FHD60)
	JPEG Encode	250 MP/s
	JPEG Decode	250 MP/s
Peripheral Interfaces (IO)	Host/Host Device	2x USB 2.0 (Host/Device) 1x USB 3.2 Gen1 (Host/Device)
	Interfaces	1x GbE MAC (TSN) 1x PCIe 2.0 (1L, RC) 4x UART 5x I2C, 2x I2C/I3C 6x SPI Master 4x PWM
	Audio	Integrated Cadence Tensilica HiFi5 DSP 2x I2S/TDM input 2x I2S/TDM output 4x PDM input 1x PCM input/output 1x SPDIF input, 1x SPDIF output
Wireless Connectivity	Wi-Fi/Bluetooth	External MT7663 Combo (2x2 Wi-Fi 5/BT 5) Or External MT7921 Combo (2x2 Wi-Fi 6/BT 5)
Camera	ISP	2x ISP Single camera: 32MP @ 30fps Dual camera: 16MP + 16MP @ 30fps
Package	Type	VFBGA 15x15x0.9mm, 0.4mm ball pitch

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