

NuMicro® M55M1

Endpoint AI Series Microcontroller



► PRODUCT DESCRIPTION

The NuMicro® M55M1 series is a new Endpoint AI microcontroller, which delivers up to 110 GOPS of AI computing power, specifically designed for Endpoint AI such as data recognition and intelligent audio. The M55M1 is a 32-bit microcontroller based on a 220 MHz Arm® Cortex® -M55 core, featuring an Arm® Ethos™-U55 Neural Processing Unit (NPU) as a coprocessor to accelerate neural network operations.

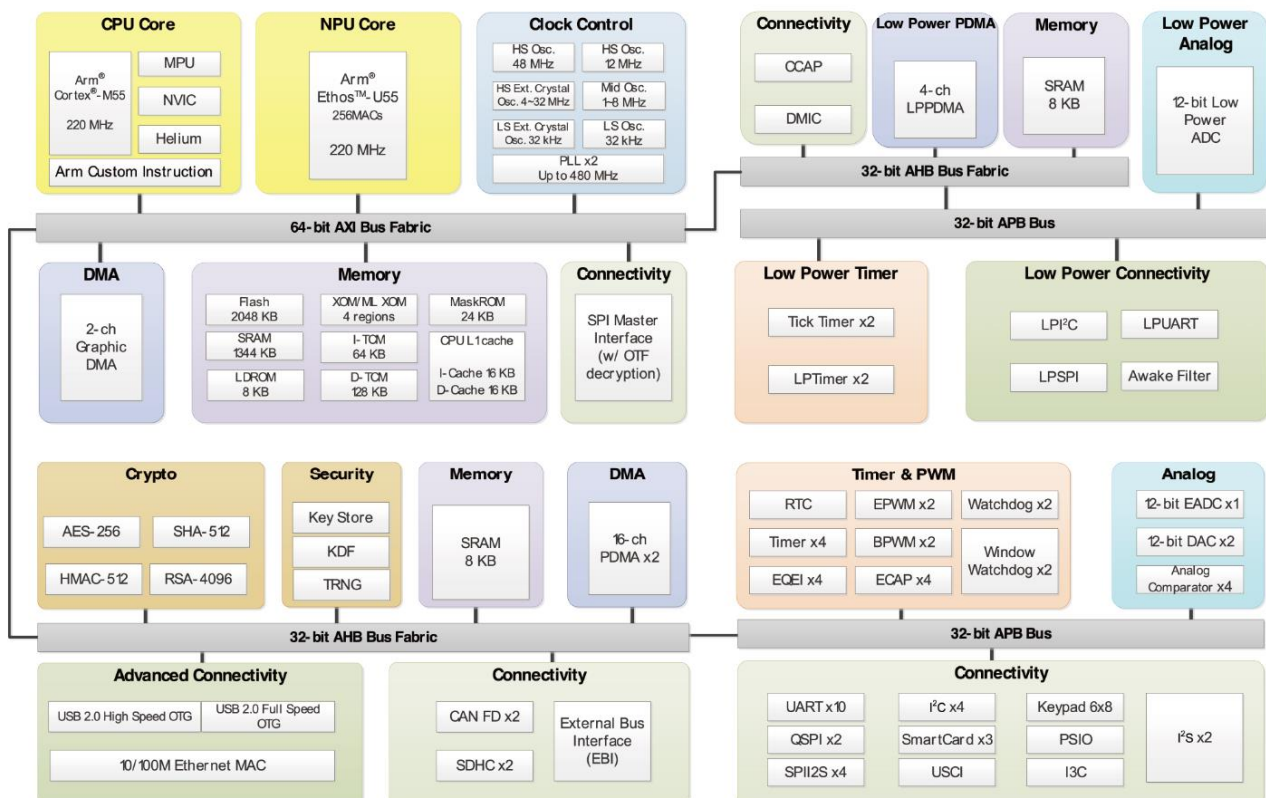
► KEY FEATURES

- AI acceleration: Arm® Ethos™-U55 NPU up to 110 GOPS
- High-performance core: 220 MHz Arm Cortex-M55 with PDMA (2 sets of 16-channel) and GDMA (1 set of 2-channel)
- Advanced compute: Helium™ vector extensions & FP64 FPU
- On-chip memory: 1.5 MB SRAM + 2 MB Flash, expandable via HyperRAM / OctoSPI
- Low power operation: 1 µA Deep Power-down, 5 power modes with low-power peripheral support
- Robust security: Hardware crypto engine and security features
- Rich connectivity: Ethernet, HS USB, dual CAN-FD, and I3C

► APPLICATIONS

- Human presence detection
- Robotics
- Smart Toys
- Sensor Hub
- Smart Appliances
- PC Accessories
- AIoT

► Block Diagram



► Support for development

Item	Name	Features
IDE & Compiler	Keil MDK IAR EWARM NuEclipse	NuMicro® M55M1 series is supported by Keil and IAR IDEs. NuEclipse is Nuvoton's proprietary IDE which integrates SDCC with free license.
Debugger & Programmer	Nu-Link2-Me Nu-Link-Pro Nu-Link2-Pro	Debugging, online programming, offline programming (optional), VCOM port, ISP Firmware upgrade.
Board Software Package	NuMicro BSP	The BSP mainly includes the device drivers, library, sample codes and documents.

► Evaluation board

- Ordering No. NuMaker-X-M55M1D
- [Quick Start](#)

► Product Selection Guide

Part No.	System								Memory						Timer		Analog		Connectivity														Security				Package										
	CPU	NPU	Operating Frequency (MHz)		Operating Voltage (min/V)		Operating Voltage (max/V)		Operating Temperature (min) (°C)		Operating Temperature (max) (°C)		GPIO (pin)	LDROM Flash (Kb)	APROM Flash (Kb)	SRAM (Kb)	GDMA (ch)	PDMA (ch)	LPDMA (ch)	HyperBus	Timer	RTC	EADC (ch)	LPADC (ch)	DAC (ch)	EOE & ECAP	ACMP	UART	QSPI	I2C	I3C	USCI	SP1/PS	CAN FD	SDHC	PQIO	USB FS OTG	USB HS OTG	10/100 EMAC	DMIC (ch)	Camera Interface	EBI	TRNG	XOM	Key Store (bit)	Crypto	Package Type
M55M1H2LJAE	Cortex-M55	Ethos-U55	220	1.71	3.6	-40	105	143	8	2048	1552	2	32	4	1	4	1	24	24	2	4	4	14	2	5	1	1	5	2	2	8	1	1	1	4	v	v	v	v	v	v	v	v	LQFP176	24x24		
M55M1K2LJAE	Cortex-M55	Ethos-U55	220	1.71	3.6	-40	105	97	8	2048	1552	2	32	4	1	4	1	24	24	2	4	4	14	2	5	1	1	5	2	2	8	1	1	1	4	v	v	v	v	v	v	v	v	LQFP128	14x14		
M55M1R2LJAE	Cortex-M55	Ethos-U55	220	1.71	3.6	-40	105	39	8	2048	1552	2	32	4	1	4	1	24	24	2	4	4	14	2	5	1	1	5	2	2	8	1	1	1	4	v	v	v	v	v	v	v	v	LQFP64	10x10		

For more details, please visit <https://www.nuvoton.com/products/microcontrollers/arm-cortex-m55-mcus/m55m1-series/>

