CamThink

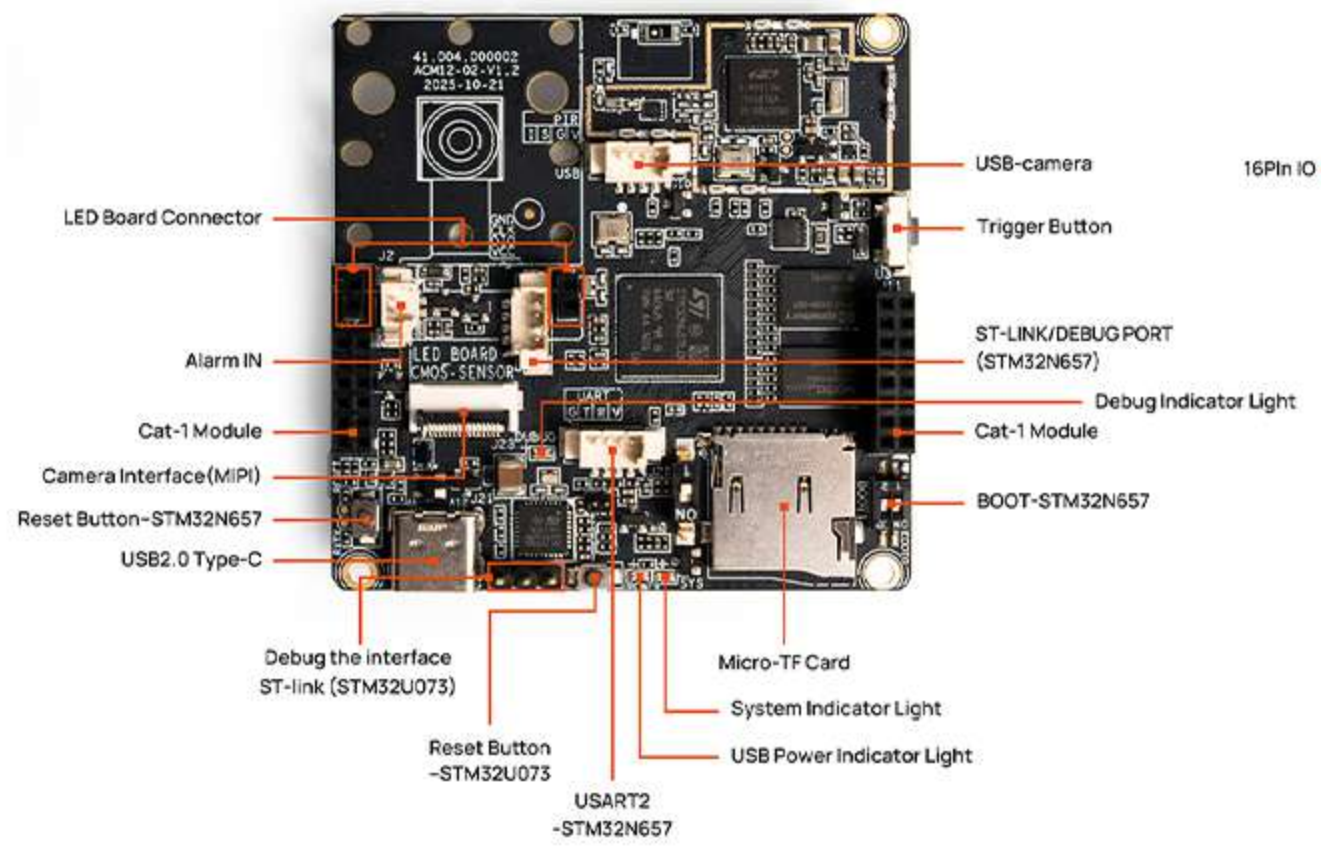
NeoEyes NE301

Dev Borad

NE300-MB01
Based STM32N6

Overview

The CamThink NE300-MB01 development board is a highly integrated edge AI camera development board designed for rapid hardware prototyping and industrial deployment. Built around the STM32N6 AI microcontroller and a low-power Cortex-M0+ coprocessor, the mainboard provides an exceptional balance of compute capability and ultra-low power consumption. Designed with modularity in mind, the board offers comprehensive physical I/O routing for communication modules, external sensors, alarms, and dual-power options.



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Highlights

Dual-Core Processing Architecture

- Primary MCU (AI & Compute): STM32N6 AI microcontroller featuring Arm Cortex-M55 (up to 800 MHz) with Arm Helium (M-Profile Vector Extension) and an integrated Neural-ART™ Accelerator (up to 0.6 TOPS).
- Secondary MCU (Always-on & Power Control): Arm Cortex-M0+ (STM32U073KBU6) designed for fine-grained localized power management, continuous peripheral monitoring, and millisecond-level wake-up triggers.
- Power Efficiency: Minimal standby current (~7μA) for deep low-power sleep states.

High-Bandwidth Interfaces

- Camera Interfaces: Native MIPI CSI-2 standard interface for high-performance CMOS sensors (up to 4MP, H.264 engine available on SoC), plus a 4-pin USB header for secondary imaging.
- Memory: 4.2 MB internal SRAM on the MCU, supplemented by 128 MB external PSRAM for heavy data/inference caching, alongside 64 MB Flash.

Detailed Expansion Interfaces

The NE300-MB01 development board breaks out essential pins and protocols to simplify hardware integration.

Core I/O and Peripheral Connectors

Communication Expansion Bus:

- 12-pin + 16-pin specialized header.

Industrial Multi-protocol Header:

- 1× UART
- 1× RS485
- 1× I2C
- 2× General Purpose I/O (GPIO)
- 1× VOUT (3.3V/5V software-controllable power output for external sensors)
- 2× GND

Trigger & Alarm Interfaces:

- 1× Hardware Alarm Input
- 1× Hardware Alarm Output
- Supports direct interfacing with 4-pin smart PIR sensors.

System Debugging & Control

Debugging & Console:

- 1× USB Type-C (Primary data / debug console)
- 1× 4-pin UART (Dedicated serial debug console)

Onboard Button:

- 1× Multi-function micro-switch (Hardware reset / Wake-up interrupt).

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Technical Specifications

Compute & Memory	
Primary Processor	Arm Cortex-M55 @ 800 MHz
Secondary Processor	Arm Cortex-M0+ (STM32U073KBU6)
NPU Accelerator	Neural-ART™ Accelerator @ 1GHz (Up to 0.6 TOPS)
Onboard Memory	4.2 MB internal SRAM, 128 MB external PSRAM, 64 MB Flash
Local Storage	MicroSD / SDHC / SDXC card slot (up to 2TB)
Cooling	Passive / Fanless design
Compute & Memory	
Power Inputs	1× USB Type-C (5V DC) 1× 2-pin Power input (3.6V - 6.4V range)
Operating Temp	-20°C to 50°C

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