Product Brief v1.0
Stream210 Module

20 Years of Connectivity for Things

Featuring Realtek's Ameba RTL8730E, StreamUnlimited's Stream210 module offers a pre-certified, high-performance solution that eliminates the need for certification efforts.

The Stream210 solder-on module integrates the core functions of a wireless audio or IoT product, combining a multi-core wireless system-on-chip and a variety of data and control interfaces for flexible and economical use.

Designed for ultra-low-power consumption, it incorporates all the characteristics of modern low-power platforms.

The Stream210 can work as a stand-alone mode or interface to an external host-MCU as part of a more sophisticated product.

Only a minimum set of peripheral components on a low-cost 2-layer board are needed to build up a complete product.

Stream210 Technical Specifications

Processor	Dual-Core ARM Cortex-A32 @ 1.3GHz with embedded MCU
Connectivity	Dual-Band Wi-Fi 6 (20MHz Bandwidth) Bluetooth 5.3 with LE Audio
Design Features	Compact size for easy integration (25.4mm x 27.5mm) Low power consumption suitable for battery-powered applications.
Modular Certifications	FCC, IC, RED, MIC, SRRC Wi-Fi Alliance and Bluetooth SIG listings available

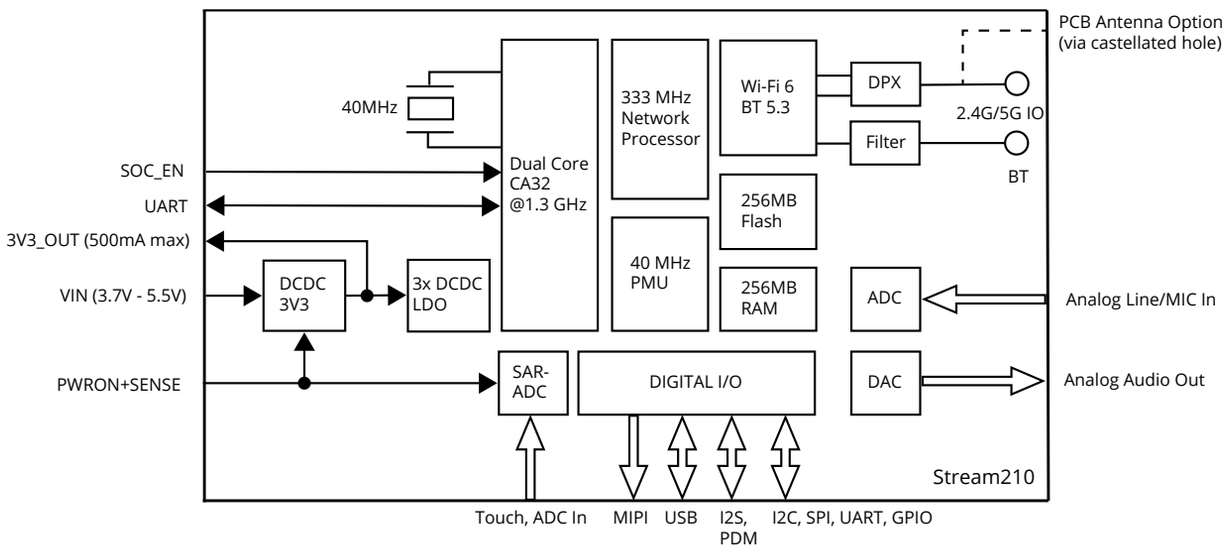
Stream210 Software

Linux-Based StreamBSP	Features a Linux-based Board Support Package (StreamBSP) for streamlined software integration. Supports Yocto-based package builds, offering a flexible and customizable software environment. This feature is crucial for developers aiming to create reproducible and tailored applications across different platforms and industries.
System Management & Security	OTA Update Management ensures secure and stable system updates over the air. Also supports update options for fast development via SSH, UART, web client, or USB. Includes secure boot and comprehensive driver support, enabling integration with a wide range of actuators, sensors, and display panels. Built-in Wi-Fi and Bluetooth (BT/BTLE) support for immediate wireless connectivity.

Stream210 Peripheral Interfaces & Audio Features

Interfaces	SDIO host, LCDC with support for high-resolution displays up to 1024×768 @60Hz over MIPI-DSI, LEDC, IR, ADC, Cap-Touch Controller up to 9 channels, PWM alongside standard interfaces like I2C, (Q)SPI, USB, UART, SWD integrated into the RTL8730E.
Advanced Audio Capabilities	AMIC / DMIC, VAD, AEC, stereo DAC, headphone output, I2S, suitable for smart audio solutions.
GPIOs	Up to 46 versatile GPIOs ready to be used in your secure IoT and intelligent voice interaction applications.

Stream210 Block Diagram



Stream210 Key Benefits

Reduced time-to-market	Pre-certification for faster market entry with minimal development time and compliance efforts.
Cost and Risk Reduction	Eliminates certification fees and clears roadblocks, reducing development costs for smoother market entry. Integrates the KM0 processor to avoid the need for external MCUs, reducing power consumption and component costs.
Ready-to-Use Software and Robust Support	Features a comprehensive Board Support Package for quick setup, supported by ongoing maintenance and security updates from StreamUnlimited. Minimal bring-up image with common Linux packages to fast-track development.
Industrialization-Ready Solution	All necessary tools for industrialization are available, such as debugging and programming tools, simplifying the product development process.

Stream210 Applications

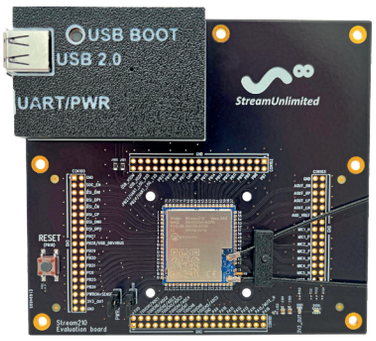
Smart Home	Smart IP cameras, security systems.
Health and Fitness	Fitness equipment, requiring advanced connectivity and user interface capabilities e.g. treadmills.
Industrial	Industrial refrigerators, air quality monitors, machinery management systems.
Consumer Electronics	Devices with Wi-Fi/Bluetooth connectivity and a small screen or touchscreen interface (e.g., EV chargers, AC thermostats, POS systems).
Audio Devices	Digital radios, streaming audio receivers, wireless speakers, smart speakers, Wi-Fi headphones.
Smart City	Traffic control, environmental monitoring.
Automotive	Infotainment systems, vehicle diagnostics.
Smart Logistics	Tracking systems, warehouse management, interactive route planning displays.
Advanced Human Machine Interfaces and Gateway	Enables responsive touchscreen, voice, and wireless interfaces for smart control panels, kiosks, and edge IoT gateways.

Stream210 Comprehensive Documentation

Provides Hardware Integration manual, demo Linux applications, driver support, and demos for low power and internal MCU programming to facilitate rapid development and deployment.

Stream210 Evaluation Platforms

Stream210 Evaluation Board



Includes demo codes, offering a practical starting point for development and hands-on experience for engineers.

Ensures all IOs and buses are accessible.

Pre-flashed with standard Linux packages such as Iperf, Python3, i2c-tool, Wget, Pipewire, Stress, Bluez, Dropbear, etc.

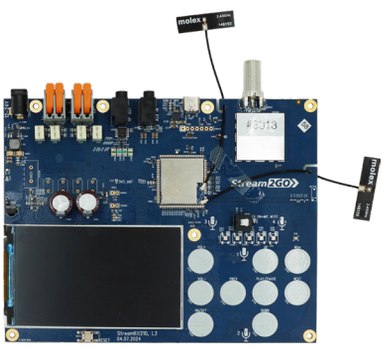
Dedicated development kits are available for audio projects.

Powered via USB. UART debug interface available via the same USB port.

USB-A port available.

StreamKit210

Description



For applications requiring specialized audio features, such as intercom systems, smart toys, and smart furniture—**StreamKit210** is also available in a dedicated audio version, specifically designed to support advanced audio integration and development.

StreamKit210 is a fully integrated evaluation and development platform built around the Stream210 module, designed to accelerate prototyping and testing of embedded Linux applications.

With onboard controls and remote interface support, it enables fast, developer-friendly implementation of user experiences and system logic across a variety of use cases—from smart home products and IoT devices, to industrial touchscreen systems.

Ideal for developers, integrators, and product teams, StreamKit210 offers a robust solution, significantly reducing the time-to-market. It provides a ready-to-use platform to evaluate hardware and a comprehensive software stack that has been proven and refined over the past 20 years.

Key Features

USB-C connector with integrated debug UART

Loudspeaker terminals with onboard amplifier

Onboard Wi-Fi and Bluetooth antennas

Touch buttons for user interaction

Onboard controls and remote interface support for rapid prototyping

Ideal for developing user experiences and system logic in smart home, IoT, and industrial applications

DAB tuner for digital broadcast evaluation

Available Software Components

Connectivity	
WLAN	Includes Wi-Fi connectivity, WPS, Infrastructure mode, and Soft AP for versatile wireless configurations.
Bluetooth	Supports AVRCP, A2DP, SBC, AAC-LC, BLE with remote control capabilities and LE Audio.

User Interface	
Multi-Language & Remote UI	Enables remote device control and monitoring, crucial for applications in manufacturing and logistics.
StreamAPI/WebUI/App	Simplifies user interface customization, improving interaction and management across devices.

Physical Interfaces	
Control Options	Provides control options such as Local Keys and IR for intuitive and simple user interactions across embedded applications.
ADC & DAC	Includes a built-in 4-channel 24-bit ADC and 24-bit DAC for high-resolution audio and versatile analog signal processing across various applications.
USB Support	Facilitates the use of external storage via USB, essential for data logging and configuration updates in field operations.

Software Management	
USB & Internet Upgrades	Ensures easy and secure software updates, minimizing downtime in industrial settings

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