

μ111 • Low-power real time operating system for secured IoT applications

General description

The μ111 package is a collection of expandable software modules & tools. At the core of μ111 is the real-time μkernel; highly portable, scalable, preemptive, configurable, real-time, multitasking kernel for microprocessors, microcontrollers and DSPs.

Offering unprecedented ease-of-use, the μ111 package is delivered with complete 100% C99 source code and in-depth documentation. It runs on a large number of processor architectures, with ports examples available for download on request.

The μ111 package allows you to adjust your system's memory footprint based on your design requirements, saving valuable memory space. The Nano version is specially tailored to minimize the memory footprint suitable to be embedded in ASIC.

Benefits

- Versatile console-based interface
- Console tools for on-the-fly debugging, analysis and software download
- Easy and rapid porting on new CPU / platform
- Allows to build secured and reusable applications
- Rapid path between off the shelf microcontroller boards and ASICs
- Optimal usage of the time and memory constraints
- Available sources with a LTS license (Long Term Support)
- Supported cores: Cortex-M0 -M0+ M3 -M4 -M7 -M23 -M33, RISC-V RV32 & RV64
- Ready ports: STM32xxx, Ambiq Micro Apollo2, ON Semiconductor RSL10, Canaan Kendryte K210, Nordic Semiconductors nRF5xx, GigaDevice GD32VF (other ports on demand)

Applications

- Wearables, connected sports & medical equipment
- Industrial & used in space applications
- Indoor localization
- Low-power protocols management

Key specifications

- **Portable:** The μ111 μkernel runs on large number of processor architectures, such as ARM Cortex-Mx, RISC-V RV32 & V64, CSEM icyflex. It can take advantage from the user/machine spaces and from specific secure units such as MPUs
- **Scalable:** The μ111 μkernel allows for almost unlimited tasks and kernel objects. The kernels' memory footprint can be scaled down (Nano version) to contain only the features required for your application, typically ~6–10 KBytes of code space and ~1 KByte of data space
- **Reliable:** The μ111 package includes debugging features that reduce development time. The μkernel can provide extensive range checking (memory leaks, stack limits, etc.)
- **Efficient** μ111 μkernel can include valuable runtime statistics, making the internals of your application observable. Identify performance bottlenecks, and optimize power usage, early in your development cycle
- **Toolchain.** μ111 package is developed using full opensource tools. Supported compiler goes up to the latest gcc, but other proprietary tools could be easily adapted. All the building scripts are available for macOS, Window 10, Ubuntu

