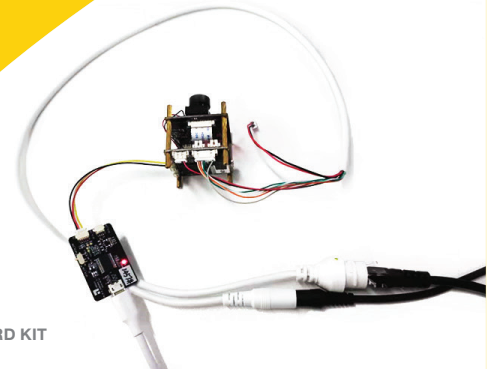# LUMISSIL Microsystems

A Division of ISSI®

SNIPE
Development Kit

EVALUATION-BOARD KIT

SNIPE is an AIoT application development kit based on the QFN package of T31. T31 has a Starlight Enhancement level ISP and a variety of peripheral interface. The SNIPE development kit helps customers to speed up their product development. It consists of development boards (core module and sensor board), an operating system and a SDK package. With Ingenic's SoC T31 as the processor, the kit is featured with high performance compute capacity, real-time controller, large-volume on chip memory, a variety of multimedia processing ability, as well as Megabit Ethernet networking and other connectivity options. The target applications are surveillance, home monitoring camera, conferencing camera, dash camera, etc. Users can design and evaluate such solutions with the kit easily.

Open source operation system, drivers, programming tools and other software packages and documentation of hardware design are available. The core module is useful for a developer's R&D efforts and is available as a standalone product too.
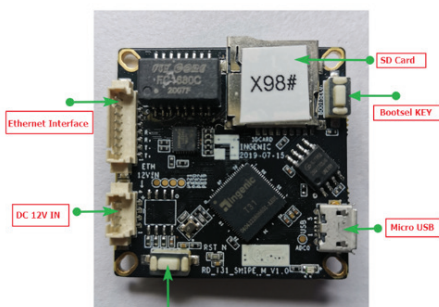
BENEFITS

- Open Source Hardware & Software - Hardware schematic diagram, PCB design, BOM, OS (Linux3.10, Linux4.4) and driver software packages
- Core Module - mass shipment is available
- High Quality Multimedia Capacity - VPU with H.264 and H.265 encoding; digital and analog audio interfaces
- Advanced Connectivity - Megabit Ethernet (compliant with IEEE1588- 2002), UART, PWM, ADC, I2C
- Advanced AI development platform, known as "Magik"; typical AI algorithms available: smart tracking, person detection, baby cry detection, etc.
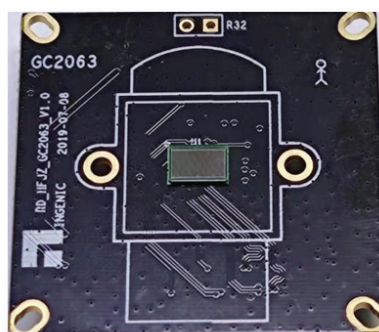
FEATURES

- Ingenic T31SoC, includes a main 1.5GHz XBurst CPU core, with MIPS ISA, 128bit MXA, FPU and MMU(SIMD128 AI), 64kB data L1 cache, 128kB L2 cache.
- Memory: 512Mb or 1Gb DDR2 in chip, 16MB SPI Nor Flash, TF socket.
- Tiziano-II ISP engine, maximum 2592x1900 processing resolution, extremely low light enhanced
- Camera Interface: Support DVP camera interface or MIPI-2lane or 4lane, up to 5M (2592*1900) @ 25fps
- Advanced 2D/3D de-noise, 3A, DRC
- MIC and Speaker on board
- USB WIFI support
- ETH MAC, 10/100Mbps Ethernet
- USB2.0 (Micro-B), full speed and high-speed modes are supported. It can also be used as host OTG.
- USB-To-UART for debugging
- Extension port for I2C/USB/SDIO/RMII/ADC
- Power consumption: Approximately 100mA@12V for a 1080P@25fps H.265 streaming via Ethernet
- Linux 3.10 with open source code, Linux 4.4 is also supported
- Interrupt Controller, Watch Dog, System Timers, DMA and PWM with timer and counter
- 2 keys for user self-definition, 1 reset key and 1 key to select the booting mode of the system
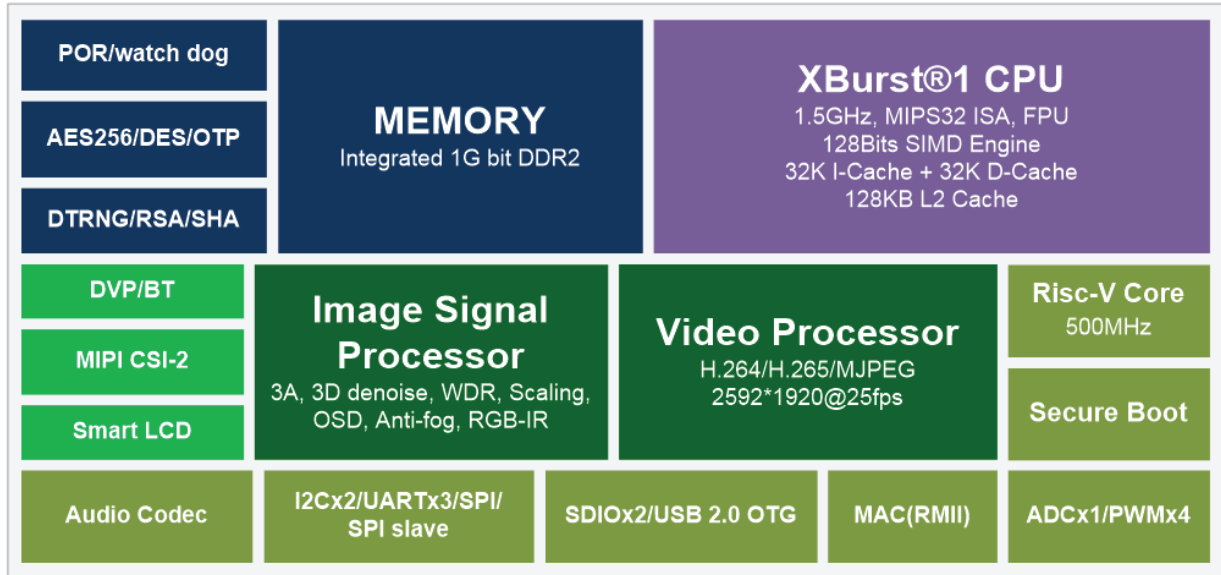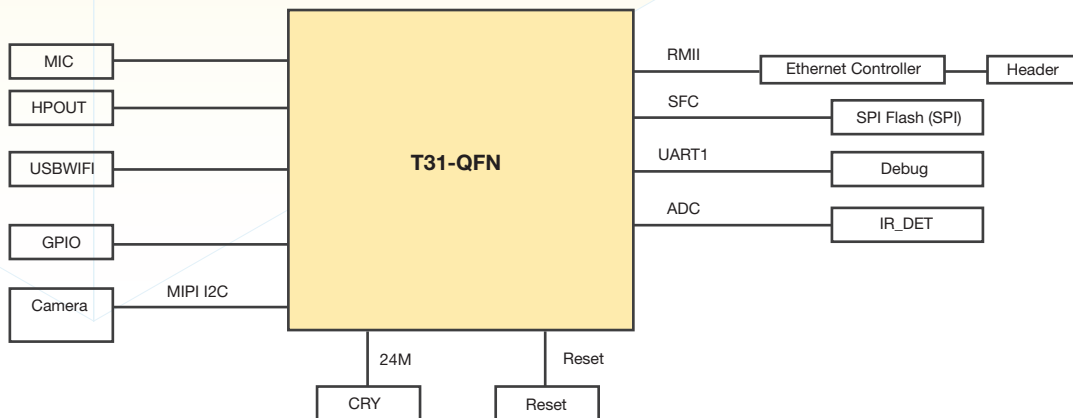
APPLICATIONS & SOLUTIONS

- Edge Deep Learning: Detection solutions - Human body detection, vehicle detection, human face detection, motion detection etc.; Recognition solutions - Plate recognition, facial recognition etc.
- Human Machine Interfaces: Smart Small Appliances, Smart toys, Smart oven, Smart Pet Feeder
- Surveillance camera or home monitoring camera. Easy to install Such cameras can connect to network via wireless or wired connection. Ex: Indoor/Outdoor camera, cube camera, security cameras, IPC&NVR
- Conferencing camera: USB cameras, UVC
- Dash camera: Single lens vehicle driving video recorders

CORE MODULE IMAGE & SENSOR BOARD IMAGE

RD_T31_SNIPE_M_V1.0

RD_HFJZ_GC2063_V1.0

SYSTEM DIAGRAM

POR/watch dog	MEMORY	XBurst®1 CPU
AES256/DES/OTP	Integrated 1G bit DDR2	1.5GHz, MIPS32 ISA, FPU
DTRNG/RSA/SHA		128Bits SIMD Engine
		32K I-Cache + 32K D-Cache
		128KB L2 Cache

DVP/BT	Image Signal Processor	Video Processor	Risc-V Core
MIPI CSI-2	3A, 3D denoise, WDR, Scaling,	H.264/H.265/MJPEG	500MHz
Smart LCD	OSD, Anti-fog, RGB-IR	2592*1920@25fps	Secure Boot

Audio Codec	I2Cx2/UARTx3/SPI/ SPI slave	SDIOx2/USB 2.0 OTG	MAC(RMII)	ADCx1/PWMx4

SYSTEM ARCHITECTURE

ORDERING INFORMATION

EVK Part Number: **SNIPE-EB**

EVK Components:
1) RD_T31_SNIPE_M_V1.0 (1)
2) RD_HFJZ_GC2063_V1.0 (1)
3) RD_HFJZ_USBDEBUG_V1.1 (1)
4) Power/Ethernet cable (1)