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Halley5
Development Kit for AIoT

Halley5 is an AIoT application development kit based on X2000. The kit consists of development boards (core module, base board and camera board), an AMOLED Screen, an operating system and a SDK package. With an Ingenic's SoC X2000 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 Gigabit Ethernet networking and other connectivity options. The target applications are AIoT, human machine interfaces, edge computing and computing-controlled applications as well. Users can design and evaluate such solutions with the kit.

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.

FEATURES

• Ingenic X2000SoC, includes a main 1.2GHz XBurst2 CPU core,with MIPS ISA,128bit MXA, FPU and MMU, and a secondary 240MHz XBurst0 CPU core.

• Memory: 128MB LPDDR3 in chip, 256MB SPI NAND Flash, TF socket.

• AMOLED screen (1080P).

• Camera Interfaces: Support DVP camera interface; Dual MIPI-2lane or 4lane, up to 1080P@120fps.

• USB2.0(Type-C), full speed and high-speed modes are supported, can be host or device, OTG.

• 10/100/1000Mbps Ethernet, RJ45 port.

• USB2UART for debugging.

• WIFI & Bluetooth, dual frequency, IEEE 802.11 b/g/n/ac, support Bluetooth5.0 and BLE, 2.1+EDR.

• Extension port for UART, SPI, ADC, PWM.

• 4 Digital-MIC ports.

• Line-in for analog MIC.

• Electret MIC on board.

• Speaker interface.

• Linux 4.4 with open source code.

• Interrupt Controller, Watch Dog, System Timers, DMA, and PWM with timer and counter, RTC.

• Low power modes: Idle, Sleep, Deep-sleep, Hibernate.

• 1 LED for power, 1 LED for reset.

• 2 keys for user self-definition, 1 reset key and 1 key to wake the system.

BENEFITS

• **Open Source Hardware & Software** - Hardware schematic diagram, PCB design, BOM, OS (Linux4.4) and driver software packages.

• **Core Module** – With a design of stamp-holes, mass shipment is available.

• **High Quality Multimedia Capacity** - VPU with H.264 encoding and decoding; dual ISPs; connecting up to 3 cameras; digital and analog audio interfaces.

• **Advanced Connectivity** - Gigabit Ethernet (compliant with IEEE1588- 2002), SSI, UART, PWM, ADC, I2C.

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APPLICATION/SOLUTIONS

• **Edge Deep Learning:** Detection solutions - Human body detection, vehicle detection, human face detection etc.; Recognition solutions - Plate recognition, speech recognition, facial recognition etc.

• **Baseline Algorithms:** QR Code Readers, Facial Recognition, Finger Print Recognition.

• **Human Machine Interfaces:** Smart Panels, Smart Air-conditioners, Smart Refrigerators, Smart Small Appliances.

• **Multi-app Solutions:** Cloud Printers.

ORDERING INFORMATION

Development Board:

Part No.	Chip Package
HALLEY5_EVB_CAM_LCD	BGA-270

Core Module:

Part No.	Chip Package
HALLEY5_CB	BGA-270

CORE MODULE IMAGE

DEVELOPMENT BOARD IMAGE

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SYSTEM DIAGRAM
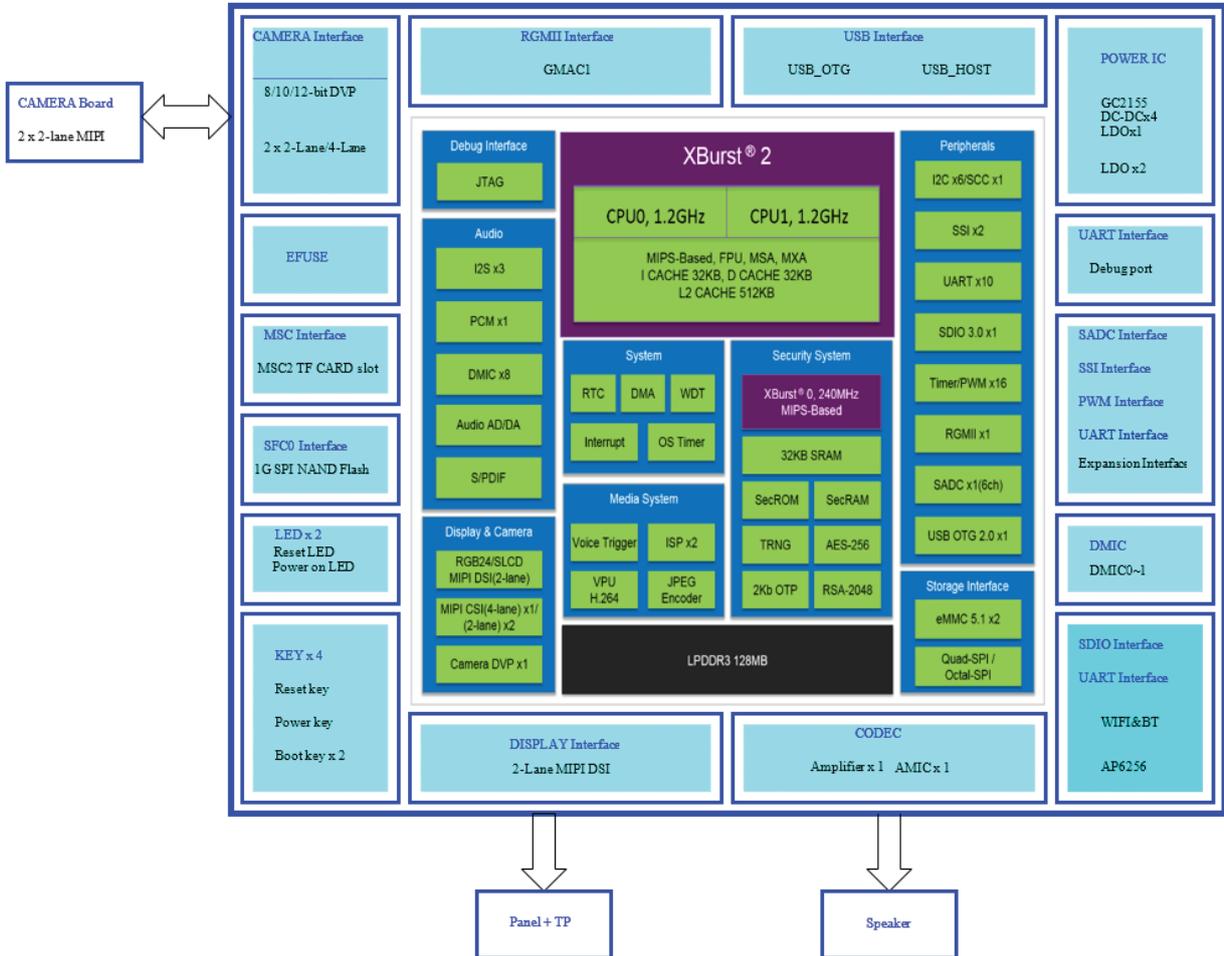
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