Infotainment System Controller

Datasheet

https://ecotron.ai/

Change history

Modification Date	Version	Version
2025.07	V 1.2	Initial Version

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1. Overview

Ecotron’s Infotainment System Controller is an intelligent computing platform developed for the smart cockpit domain, with NXP's i.MX 8QuadMax chip and Infineon's TC297 chip as the internal main computing chip, and based on the supporting basic software, development tools, and basic function software package, system developers can safely, conveniently, and efficiently complete the development and adaptation of smart cockpit products. Based on the supporting basic software, development tools and basic function software packages, system developers can safely, conveniently and efficiently complete the development and adaptation of smart cockpit products.

2. Hardware Description

The hardware circuits of the computing platform are designed according to the application requirements of the intelligent cockpit system. Two different processors, SOC and MCU, are selected to adapt to the computational requirements of different tasks of the intelligent cockpit; the electrical parameters meet the requirements of automotive grade; and there are a variety of data transmission interfaces to meet the needs of various audio and video interactions of the intelligent cockpit system.

Interface type	Quantity	Function	Internal Chip	Connector
Camera interface	6	GMSL	SOC	FAKRA
Display	2	GMSL	SOC	FAKRA
4G	1	4G	SOC	
WiFi	1		SOC	
BT	1		SOC	
GPS	1		SOC	
USB	2		SOC	
In-vehicle Ethernet	6		Switch	
RS232	1	For Debug	SOC	
CAN/CANFD	3		SOC	
AM/FM	1	FM radio	MCU	
CANFD	3	2-way with frame-specific wakeup	MCU	
LIN	2	No wakeup required	MCU	
KEYON	3	1-way for SOC, 2-way for MCU		
Power Positive	4			
Power Ground	4			
Signal Ground	8			

2.1 Port Configuration

2.2 Specifications

Item	Design specifications
Operating voltage	DC 9～32V
Operating space	8GB
Storage space	64GB, expandable solid state drive
Operating temperature	-20～70℃
Operating humidity	0～95%, no condensation
Storage temperature	-40～85℃

2.3 System Main Chip

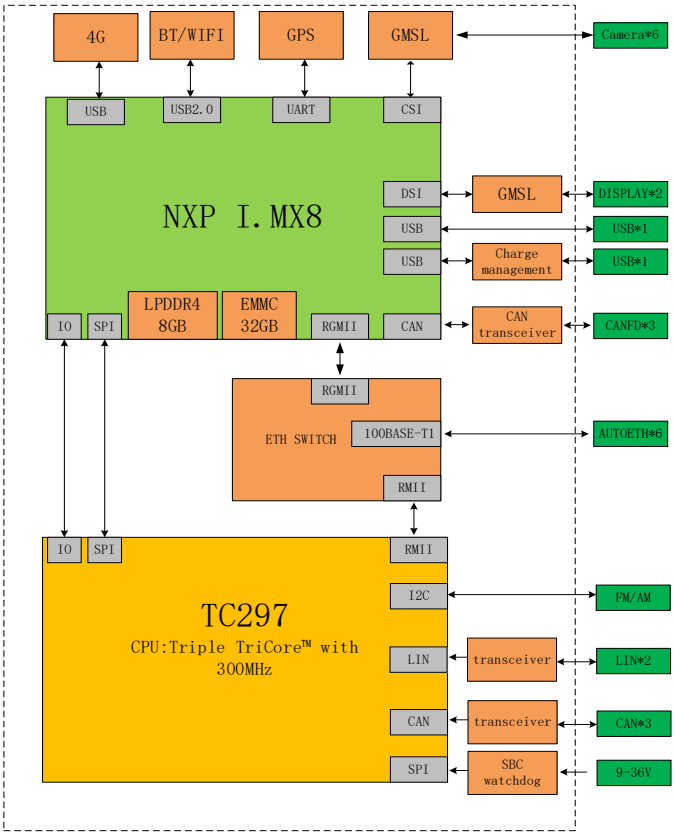
The i.MX 8QuadMax processor consists of eight cores (two Arm Cortex -A72, four Arm Cortex -A53, and two Arm Cortex -M4F), dual 32-bit GPU subsystems, 4K H.265-enabled VPUs, and dual failover-ready display controllers. The processor supports a single 4K display (with multiple display output options including MIPI-DSI, HDMI, eDP/DP and LVDS) or multiple smaller displays. Memory interfaces support LPDDR4, Quad SPI/Octal SPI (FlexSPI), eMMC 5.1, RAW NAND, SD 3.0, and a wide range of external I/ o's such as PCIe to provide extensive flexibility. Advanced multi-core audio processing is supported by Arm cores and high-performance Tensilica HiFi 4 DSPs for audio pre- and post-processing as well as speech recognition.

The microcontroller of the Infotainment System Controller is based on Infineon's TC297 family of chips, which includes a triple-core TriCore™ architecture with 300MHz operating frequency, up to 728KB + 8MB of RAM with ECC (Error Correcting Coding) protection, and is designed on the basis of the ISO26262 standard, which supports the highest ASIL-D safety level requirements. Together with the base chip, it realizes the hardware core security architecture design. The chip resources are listed below:

Feature	Detail
Micro Control Core	32-bit Infineon TC297TP
Maximum Frequency	300MHz
Flash	8M
SRAM	728K
EEPROM	128K
Float Point Capability	Yes
SBC	TLF35584

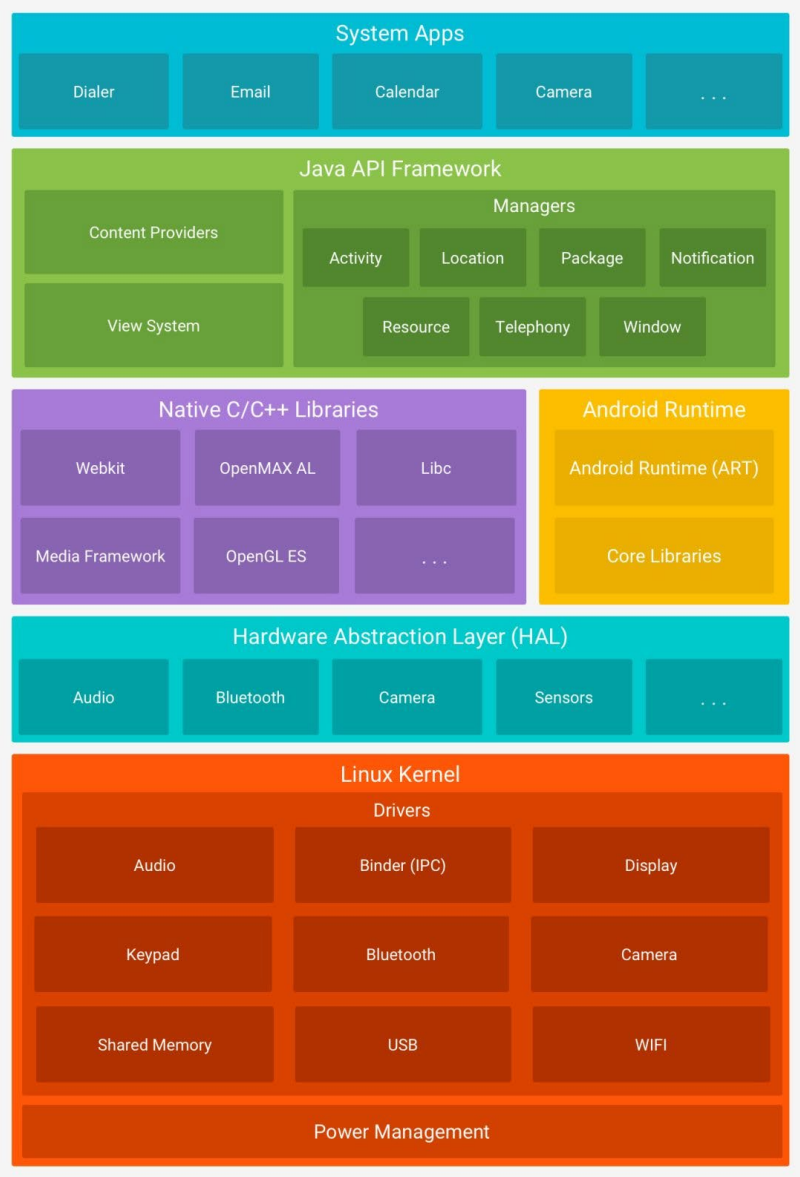
2.4 Circuit Diagram

The internal hardware circuit structure of the Infotainment System Controller is shown in the following figure.



3. Basic Software

The SOC software system of this computing platform is developed for the smart cockpit system based on Android system. The figure below shows the software architecture of SOC. The device has pre-installed and deployed basic software such as Linux Kernel, HAL, Native C/C++ Libraries, Android Runtime, Java Framework, etc., and can provide basic functions such as 360 Around View, Driver Status Monitoring, Voice Recognition, etc., according to the user's needs. It also supports third-party applications such as mainstream maps and audio/video players, and users can also develop specific applications according to the needs of their car models.



4. Application Scenarios

The Infotainment System Controller uses a common connection method as shown below.