

PicoCore™MX8ULP

Computer On Module with NXP i.MX 8ULP

Characteristics

- NXP i.MX 8ULP applications processor
- 1-2x Cortex®-A35- 800MHz & -M33- 216MHz
- HIFI4 DSP – 600MHz, 2D/ 3D GPU OpenGL/CL 3.1
- TFT MIPI-DSI, RGB 24 Bit
- 2D and 3D hardware acceleration
- Touch (4-wire/ PCAP Touch) via I2C
- up to 2GB LPDDR4 x32 RAM, 64GB eMMC, 2k EEPROM
- Audio Line In/Out, Mic, Headphone or I2S
- 2x USB 2.0, MIPI-CSI
- 100Mbit Ethernet or RMII
- 2x SPI, 4x I2C, 4x UART, 1x CAN
- I/O, 2x SDIO (SD-Card), RTC
- WLAN 802.11a/b/g/n/ac 2,4/5GHz + BT 5LE
- 5V with 2W typ., 0°C - +70°C (-20°C/ -40°C - +85°C)
- 2x 100pin, height 1.5mm up to 3mm
- Available up to minimum 2035

Description

The heterogeneous multi-core processor consists of up to two ARM® Cortex®-A35 cores (800MHz), an additional Cortex®-M33 for real-time processing and an Tensilica HIFI4 DSP. Displays can be connected either via a MIPI-DSI interface (4 lanes) or via RGB.

The i.MX 8ULP offer a 2D GPU and a 3D GPU with support for OpenGL ES 3.1, Vulkan 1.1, OpenCL 2.x and Open VG 1.1. This unit offers enough performance for a modern user interface.

The highly integrated and extremely power-saving SoC i.MX8ULP is particularly suitable for portable, battery-operated devices. A small, compact module is therefore the ideal solution for this CPU.

This SoM is available in both consumer and industrial versions.

The PicoCore™ standard (35x40 mm) uses two connectors (Hirose DF40C) with 100 pins each. This enables a compact design and a small board-to-board distance (1.5-4mm).

With the F&S project guarantee, F&S Elektronik Systeme accompanies customers from the start of the project to the successful completion of the project.

On-Board Operating System



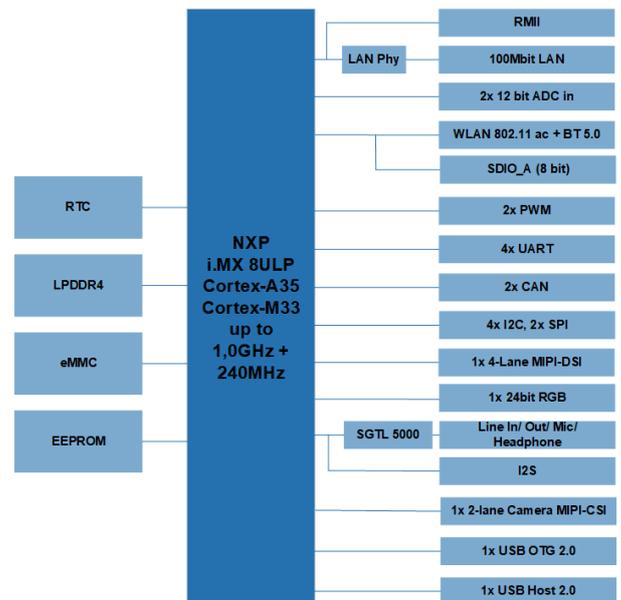
The operating system Linux (with support for Yocto) was ported by the experienced software team from F & S Elektronik Systeme.

The drivers have been adapted and tested for all interfaces. Different memory sizes and different displays are supported. Finished drivers exist for numerous touch controllers. An adapted FreeRTOS and various "bare metal" examples are available for the Cortex®-M33. Communication between Cortex®-M33 and Cortex®-A35 has been implemented and tested. The Cortex®-M33 can process real-time tasks shortly after switching on.

Original Size



Block Diagram



Starterkit

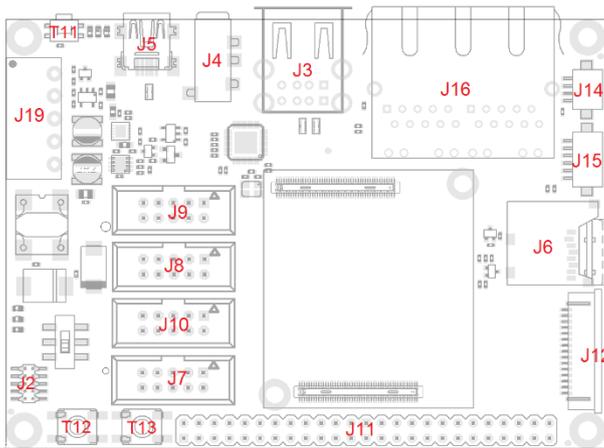
The starter kit consists of a carrier board with attached PicoCore™ MX8ULP, a cable set and access data to the download area of F&S.

The forum with over 4000 registered customers offers sample programs and is online 24/7 for your support requests.

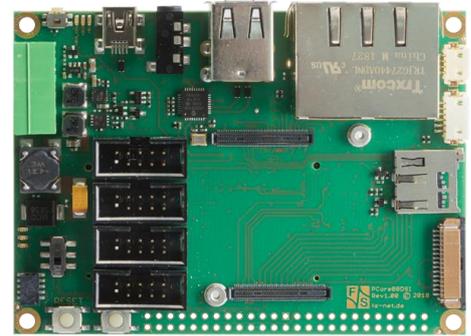
In addition, there are various workshops (including security, asymmetric multiprocessing), so that a quick and easy development start is possible.

Documents for hardware and software development and free support by the experienced engineers of F&S Elektronik Systeme GmbH are available.





- J1 : PicoCore
- J2 : JTAG
- J3 : 2x USB Host
- J4 : Audio (HP + MIC)
- J5 : USB OTG
- J6 : µSD
- J7 : CAN
- J8 : UART_A (RXD / TXD)
- J9 : UART_B (RXD / TXD)
- J10 : UART_C (Komplett)
- J11 : GPIO
- J12 : MIPI-CSI (Camera)
- J13 : MIPI-DSI (2CH / 4Lanes)
- J14 : Display (BLPWM...)
- J15 : I2C für Touch
- J16 : 2x ETH
- J17 : MPCle (Bottom)
- J18 : SIM (Bottom)
- J19 : Power
- T11 : On/Off oder Reset
- T12 : Reset
- T13 : BOOTSEL



Workshops

We offer various Linux workshops to get you started.

- Linux on F&S modules
- Linux - Qt5 workshop
- Linux - Asymmetric multiprocessing
- Linux - Secure Boot

You can find detailed information on our website.

Technical Data

Power Supply:	5V (3.8V – 5.5V)
Power Consumption:	2W typ.
Display:	RGB 24 Bit MIPI-DSI up to 4 lanes
Camera:	MIPI-CSI up to 2 lanes
Interfaces:	1x 100Mb Ethernet or RMII 1x USB2.0 Host 1x USB2.0 OTG Audio Line In/ Out/ Mic/ HP or I ² S 4x Serial, 4x I ² C, 2x CAN, 2x SPI, 2x SDIO, Watchdog, PWM, 2x ADC (12 Bit) 1x SPDIF/ DMIC WLAN 802.11a/b/g/n/ac+BT 5LE LPDDR4 up to 2GB
RAM:	eMMC up to 64GB, 2k EEPROM
Program Memory:	Solo/ Dual ARM® Cortex®-A35-800MHz & Cortex®-M33 -216MHz HIFI 4DSP – 600MHz
Processor:	
Temperature Range:	0°C - +70°C, (-20°C/ -40°C - +85°C)
Size:	35mm x 40mm x 8mm (LxBxD)
Plug Connector:	2x 100pol Hirose DF40C
Weight:	about 10g

Standard Versions/ Order Notations

PicoCoreMX8ULP-V1I

Dual Cortex®-A35, 2GB RAM, 8GB eMMC, 2k EEPROM, Audio Codec, 100Mbit LAN, CAN, WLAN/BT, MIPI-DSI, RTC, -20°C - +85°C, Linux

PicoCoreMX8ULP-V2I

Dual Cortex®-A35, 1GB RAM, 4GB eMMC, 2k EEPROM, I2S, RMII, CAN, RGB, RTC, -20°C - +85°C, Linux

PicoCoreMX8ULP-V5I

Dual Cortex®-A35, 1GB RAM, 8GB eMMC, 2k EEPROM, Audio Codec, 100Mbit LAN, CAN, WLAN/BT, RGB, RTC, -20°C - +85°C, Linux

Minimum Order Quantity for Special Versions:

Customer-specific Software	300 pieces
Assembly Variant	500 pieces

Standard Versions/ Order Notations

PicoCore™ MX8ULP-SKIT-LIN

Starterkit with PicoCoreMX8ULP-V2-LIN, base board, cable kit, 3.5" MIPI display, access data to BSP and documentation