

PicoCore™ MX8MN

Computer On Module with NXP i.MX 8M Nano

Characteristics

- NXP i.MX 8M Nano ARM® Cortex®-A53 Solo/Dual/ Quad @1500MHz & ARM® Cortex®-M7 @650MHz
- TFT MIPI-DSI, alternative LVDS
- 3D hardware acceleration
- Touch (4-wire/ PCAP Touch) via I²C
- up to 4GB DDR3L RAM,
- 512MB SLC NAND Flash or 32GB eMMC
- Audio Line In/Out, Mic, Headphone or I²S
- USB 2.0 OTG, MIPI-CSI
- 2x Gigabit Ethernet or RGMII
- 2x SPI, 4x I²C, 4x Serial, CAN
- I/O, PWM, 2x SDIO (SD-Card), RTC
- 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 2034

Original Size

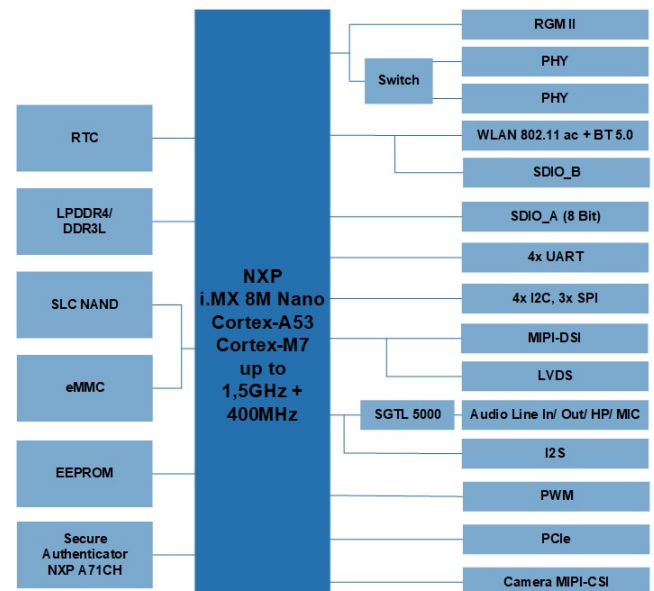


Description

The heterogeneous multi-core processor consists of up to four ARM® Cortex®-A53 cores (1.5GHz) and an additional Cortex®-M7 for real-time processing. Displays can be connected either via a MIPI-DSI interface (4 lanes) or via LVDS (2 channels). The maximum resolution is FullHD. The i.MX 8M Nano has OpenGL 2.1 / 3.0 / 3.1 and OpenCL 1.2. This unit offers enough performance for a modern user interface. In addition to Secure Boot (protection of the system against manipulation and protection of the software against decryption), an additional security chip (NXP A71CH Plug & Trust Secure Element) offers further security for IoT connections.

The customer can program the certificates himself, alternatively F&S Elektronik Systeme offers this as a service. 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.

Block Diagram



On-Board Operating System

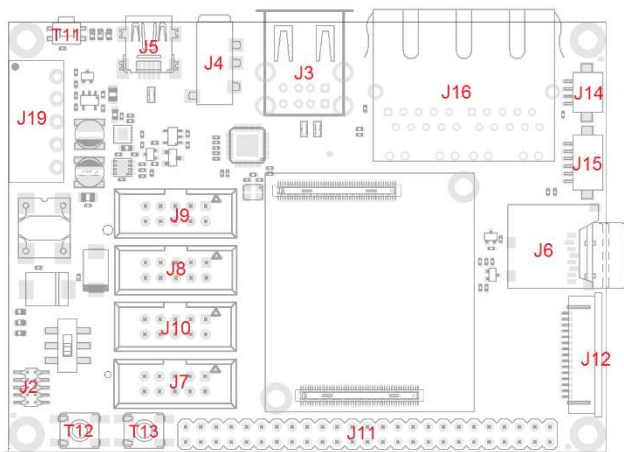


The operating system Linux (with support for Buildroot and Yocto) was ported by the experienced software team from F & S Elektronik Systeme. The drivers have been adapted and tested for all interfaces. Different memory sizes and different displays are supported. Finished drivers exist for numerous touch controllers. An adapted FreeRTOS and various "bare metal" examples are available for the Cortex®-M7. Communication between Cortex®-M7 and Cortex®-A53 has been implemented and tested. The Cortex®-M7 can process real-time tasks shortly after switching on.

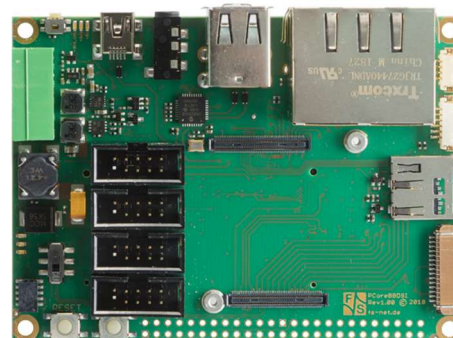
Starterkit

The starter kit consists of a base board with attached PicoCore™ MX8MN, a cable set and access data to the download area of F&S. The forum with over 3000 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 : PCIe (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
Power Consumption:	2W typ.
Display:	2x LVDS 24Bit up to FullHD or MIPI-DSI up to 4 lanes
Camera:	MIPI-CSI up to 4 lanes
Interfaces:	2x Ethernet or RGMII
(Maximum availability, but cannot be used simultaneously due to multiple occupancy of pins, please refer to list in hardware documentation.)	1x USB OTG Audio Line In/ Out/ Mic/ HP or I ² S 4x Serial, 4x I ² C, 1x CAN, 2x SPI, 2x SDIO, 8x PWM, Watchdog, 1x SPDIF, 1x ESAI, 1x SAI, 1x SSI,
RAM:	DDR3L up to 4GB
Program Memory:	SLC NAND up to 512MB or eMMC up to 32GB
Processor:	Solo/ Dual/ Quad ARM® Cortex®-A53-1500MHz & Cortex®-M7 -650MHz
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

PicoCoreMX8Mnr2-V1-LIN

Cortex®-A53 – 1.5 GHz Quad-Core, 256MB RAM, 256MB NAND Flash, I2S (Audio), RGMII (Ethernet), MIPI-DSI, 0°C - +70°C, Linux

MOQ 500pcs

PicoCoreMX8Mnr2-V5-LIN

Cortex®-A53 – 1.5 GHz Quad-Core, 512MB RAM, 4GB eMMC Flash, Audio, 2x Ethernet, CAN, 2x LVDS, 0°C - +70°C, Linux

Minimum Order Quantity for Special Versions:

Customer-specific Software	500 pieces
Assembly Variant	1000 pieces

Standard Versions/ Order Notations

PicoCore™ MX8MN-SKIT-LIN

Starterkit with PicoCoreMX8Mnr2-V5-LIN, base board, cable kit, access data to BSP and documentation

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 Cortex is a registered trademark of ARM.
 State: February 2023

