

# PicoCore™MX8MP

Computer On Module mit NXP i.MX 8M Plus

## Characteristics

- NXP i.MX 8M Plus ARM® Cortex®-A53 Dual/ Quad @1800MHz & ARM® Cortex®-M7 @800MHz
- TFT MIPI-DSI, LVDS (1-2x 4 Lanes / 1x 8 Lanes), DVI
- 2D, 3D and Video Hardware Acceleration
- Touch (analog resistive und PCAP Touch) via I<sup>2</sup>C
- up to 8GB RAM, max. 32GB eMMC
- Audio Line In/Out, Mic, Headphone (I<sup>2</sup>S also possible)
- USB 2.0 / 3.0 Device, USB 2.0 / 3.0 Host
- Max. 2x 100/1000Mb Ethernet or RGMII
- PCIe, max. 2 x MIPI-CSI
- 2x SPI, 4x I<sup>2</sup>C, 4x UART, 2x CAN
- 4x PWM, SPDIF, ESAI, SAI, SSI
- +3.8V up to 5.5VDC with 3W typ.
- 0°C - +70°C, opt. -20°C - +85°C, opt. -40°C - 85°C
- WLAN/ BT 5.0 LE
- 2x100pin, 1.5mm up to 3mm Height
- Available until minimum 2035

## Description

The PicoCore™MX8MP is based on the NXP i.MX 8M Plus ARM® CPU. The small size (35 x 40mm) makes the module the ideal partner for compact devices. The module features low power dissipation and is ideally suited for secure cloud connections.

The i.MX 8M Plus is a multi-core application processor. The i.MX 8M Plus family focuses on machine learning, advanced multimedia and industrial IoT. This CPU combines high-performance computing, energy efficiency, enhanced system security and embedded security, which is needed to drive the growth of fast-growing edge node computing, streaming multimedia and machine learning applications. At the heart of the processor is a scalable core complex with up to four ARM® Cortex®-A53 cores running at up to 1.8GHz, plus an ARM® Cortex®-M7 core for real-time processing at 800 MHz.

The i.MX 8M Plus features dual image signal processors and two camera inputs for an effective vision system. 2D and 3D graphics provide a rich visual HMI experience. Displays may be connected via MIPI-DSI, LVDS and CRT/DVI.

The PicoCore™ standard uses two connectors (Hirose DF40C) with 100 pins each. This allows for a compact design and a small board-to-board distance.

## On-Board Operating System



The F&S Linux BSP (uboot, buildroot, Yocto, QT, GStreamer) includes a customized kernel and all interface drivers incl. source.

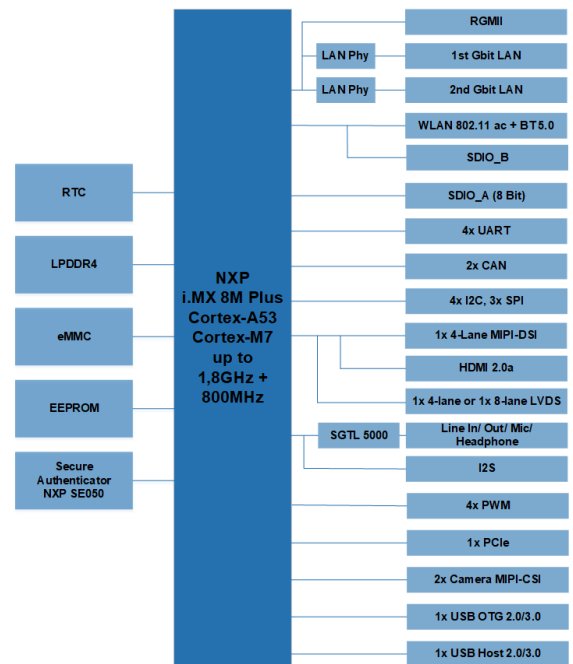
### Also available from F&S:

- YOCTO and Buildroot Board Support Package
- Up to two software releases per year (update of uboot, kernel, root file system, toolchain)
- Secure Boot
- RealTime BSP and toolchain for Cortex-M
- Over the air updates and device health information (Q1/2021)
- RGB/LVDS/MIPI Display- and PCAP touch configuration
- Device Tree adaption for carrier board of customer
- Several workshops about the above technologies

Original Size



## Block Diagram



## Starterkit

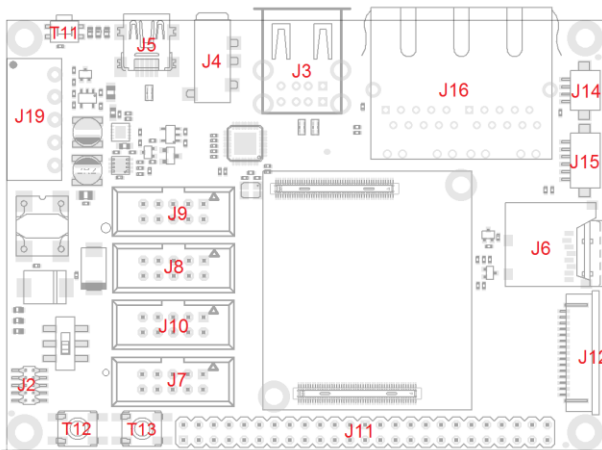
The PicoCore™MX8MP starterkit is available with Linux.

The starterkit contains of a base board with PicoCore™MX8MP module, a cable kit, as well as a 7" TFT with PCAP Touchpanel and access data to the F&S download area.

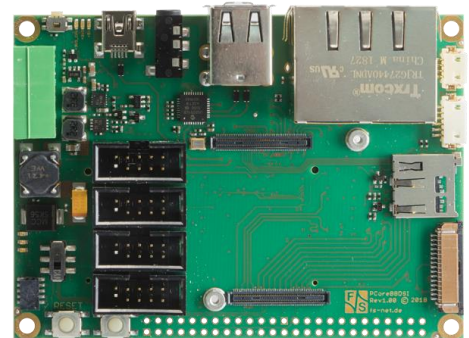
The forum with 3000+ registered customers offers example programs and is always online for support requests.

For an easy start of development we also offer workshops.





- 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

For an easy start we offer multiple Linux workshops.

- Linux on F&S modules
- Linux – Qt5 workshops
- Linux – asymmetric multiprocessing
- Linux – Secure Boot

More accessories can be found on our website.

## Standard Versions/ Order Notations

### PicoCoreMX8MP-V1-LIN

Cortex®-A53 – 1800MHz Quad-Core, 1GB RAM, 4GB eMMC Flash, I2S, Ethernet (RGMII), LVDS, MIPI-DSI 0°C - +70°C, Linux (planned)

### PicoCoreMX8MP-V2-LIN

Cortex®-A53 – 1800MHz Quad-Core, 1GB RAM, 4GB eMMC Flash, Audio, Ethernet, LVDS (2x 4 Lanes) 0°C - +70°C, Linux (planned)

### PicoCoreMX8MP-V3I-LIN

Cortex®-A53 – 1600MHz Quad-Core, 2GB RAM, 8GB eMMC, 2k EEPROM, Audio, 2x Ethernet, WLAN/BT, DVI, MIPI-DSI, -20°C - +85°C, Linux

### PicoCoreMX8MP-V3XI-LIN

Cortex®-A53 – 1600MHz Quad-Core, 2GB RAM, 8GB eMMC, 2k EEPROM, Audio, 2x Ethernet, WLAN/BT, DVI, MIPI-DSI, -40°C - +85°C, Linux

Minimum Order Quantity for Special Versions:

Customer-specific software: 500 pieces  
 Assembly Variant: 1000 pieces

## Technical Data

Power Supply:	+3.8 up to 5.5VDC
Power Consumption:	3W typ.
Interfaces-Fix:	1-2x Ethernet or RGMII 1x USB Host, 1x USB Device, 1 Serial Audio Line In/ Out/ Mic/ HP
Display:	1-2x LVDS 24Bit up to FullHD, MIPI-DSI up to 4 Lanes, DVI
Camera:	1-2x MIPI-CSI up to 4 Lanes
Interfaces-Flex:	4x Serial, 4x I <sup>2</sup> C, 2x CAN, 3x SPI, 2x SDIO, 4x PWM, Watchdog, 1x SPDIF, 1x eSAI, 4x SAI, 1x SSI, 1x QSPI, 1x RMII, 2x SDIO
RAM:	LPDDR4 up to 8GB
Program Memory:	eMMC up to 32GB
Processor:	Dual/ Quad ARM® Cortex®-A53-1800MHz & ARM® Cortex®-M7 -800MHz
WLAN/BT	WLAN 802.11ac/ BT 5.0
Temperature Range:	0°C - +70°C (opt. -20°C - +85°C / -40°C - +85°C)
Size:	35mm x 40mm x 8mm
Plug Connector:	2x 100pol Hirose DF40C
Weight:	about 10g

## Standard Versions/ Order Notations

### PicoCoreMX8MP-V4I-LIN

Cortex®-A53 – 1600MHz Quad-Core, 2GB RAM, 8GB eMMC, 2k EEPROM, Audio, 2x Ethernet, WLAN/BT, LVDS, MIPI-DSI, -20°C - +85°C, Linux

### PicoCore™ MX8MP-SKIT-LIN

Base board, PicoCoreMX8MP-V4I-LIN, cables, 7" TFT with PCAP Touch, access to docu and software

