

# armStone™MX8MP

## Single Board Computer with NXP i.MX 8M Plus

### Characteristics

- NXP i.MX 8M Plus Dual/Quad ARM® Cortex®-A53 – 1.8 GHz & Cortex®-M7
- up to 8GB LPDDR4 RAM, up to 32GB eMMC
- LVDS (24Bit) or MIPI-DSI (4 lanes) via 30pol– JLI130, HDMI (DVI), Touch via I2C
- Machine learning ML, 3D HW acceleration, OpenGL ES2.1/ 3.0/ 3.1
- 2x Ethernet 1000Mbit, 1x USB 3.0 OTG, 4x USB 2.0 Host
- 2x CAN 2.0, 4x I<sup>2</sup>C, 2x SPI, 4x UART, GPIO
- WLAN 802.11a/b/g/n BT4.1LE (pre certified)\*
- uSD-Card Slot
- 1x mPCIe with SIM Card Slot
- Camera MIPI CSI (Basler connector)
- Audio Line IN/ OUT/ MIC or I2S, RTC, Security chip,
- PicoITX formfactor
- 5V(4W typ.), 0°+70°C (-20°+70°C)
- Linux (YOCTO)

### Description

The armStone™MX8MP is a high-performance Single Board Computer in PicoITX form factor. The Cortex®-A53 CPU (64 Bit) CPU from the i.MX 8 processor family is available in Dual- or Quad-Core, as well as with an additional Cortex®-M7. The processor is very well suited for multimedia applications and the Cortex®-M7 core can be used for real-time processing.

A special feature is the Neural Processing unit (NPU) for machine learning with 2.3 TOPS. Various security functions as well as OTA (Over-The-Air Update) are available and are made available by the Linux adaptation of F&S Elektronik Systeme.

Also available are a starter kit and workshops, documentation for hardware and software development and free support from the experienced engineers at F&S Elektronik Systeme GmbH. The armStone™MX8MP will remain available until at least 2035.

### On-Board Operating System

The F&S Linux BSP (uboot, Yocto, QT, ) contains the customized kernel and all interface drivers including source.

A Cross Compiler Toolchain is also available for the creation of own bootloaders, kernels or other software. For a quick start into software development, the following workshops are offered:

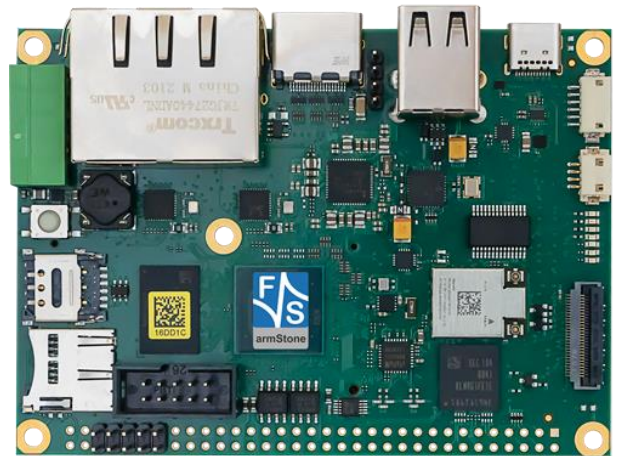
**Linux on F&S Modules** (Standard Workshop)

Additional workshops:

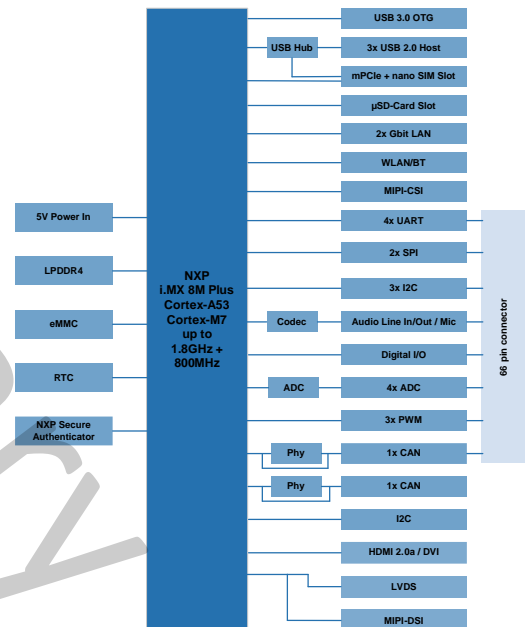
**Linux – Qt5 Workshop**

**Linux – Asymmetric Multiprocessing**

**Linux – Secure Boot**



### Block Diagram



### Starterkit

The armStone™MX8MP starter kit is available with pre-installed Linux.

It consists of an armStone™MX8MP-V4I-LIN board, a cable kit, as well as access data to documentation and software.

Our support forum with more than 3000 registered customers is always online for help.

Start your development fast and easy by attending one of our workshops.



## Pin Assignment

J1 – Feature Connector											
1	VCC3.3	12	XGPIO8/I2C4_DAT	23	XGPIO19/ROW5	34	Backlight On	45	LINEOUT_R	56	RTS2 (RS232)
2	VCC5	13	XGPIO9/TXD3	24	XGPIO29/ROW6	35	XGPIO28/I2C3_RST/ADC_IN3	46	GND	57	TXD2 (RS232)
3	XGPIO0/COL0	14	XGPIO10/I2C4_SCL	25	XGPIO21/ROW7	36	XGPIO29/RXD4	47	GND	58	CTS2 (RS232)
4	XGPIO1/COL1/SPI1_CLK	15	XGPIO11/RXD3	26	GPIO1	37	GND	48	LINEIN_L	59	SPEAKER_ROUT_N
5	XGPIO2/COL2	16	XGPIO12/I2CLK/I2C4_IRQ	27	GND	38	XGPIO30/TXD4	49	LINEOUT_L	60	SPEAKER_ROUT_P
6	XGPIO3/COL3/SPI1_CSn	17	XGPIO13/I2C_RST/CTS4/	28	XGPIO22/PWMOUT0	39	VCC3.3	50	GND	61	GND
7	XGPIO4/COL4	18	XGPIO14/ROW0/TXD1	29	XGPIO23/I2C3_SDA/ADC_IN0	40	VCC5	51	RESETBTN	62	VCC5 (COM keypin)
8	XGPIO5/COL5/SPI1_MOSI	19	XGPIO15/ROW1	30	XGPIO24/PWMOUT1	41	MIC1 (Audio pin 1)	52	VCC3.3	63	CAN1RX/CAN1L
9	XGPIO6/COL6	20	XGPIO16/ROW2/RXD1	31	XGPIO25/I2C3_SCL/ADC_IN1	42	GND	53	SPEAKER_LOUT_N	64	CAN1TX/CAN1H
10	XGPIO7/COL7/SPI1_MISO	21	XGPIO17/ROW3	32	XGPIO26/PWMOUT2	43	nc	54	SPEAKER_LOUT_P	65	BOOTSEL
11	GND	22	XGPIO18/ROW4	33	XGPIO27/I2C3_IRQ/ADC_IN2	44	LINEIN_R	55	RXD2 (RS232)	66	BOOTSEL

### Accessories

#### Display Kit LVDS

7" WVGA display with LVDS interface and matching LVDS cable with JAE FI-X30 connector

#### Heat Sink

Heat sink to use with armStone to reduce the temperature of the CPU

#### 24V Adapter

The adapter board ADP-NT24V is plugged into the voltage input plug and delivers 5V. The voltage input range is from 7,5 (13) to 36V. Further 12V is available for supplying a TFT backlight.

### Standard Versions/ Order Notations

#### armStoneMX8MP-V2-LIN

i.MX8MP Quad-1.8 GHz w/o VPU,  
1GB RAM, 4GB eMMC, Audio, 2x Ethernet, CAN, MIPI-CSI,  
1x USB3.0 Device, 4x USB 2.0,  
LVDS + MIPI-DSI, RTC, uSD Card Slot, 0°C-+70°C, Linux

#### armStoneMX8MP-V4I-LIN

i.MX8MP Quad-1.6 GHz with VPU,  
2GB RAM, 8GB eMMC, Audio, 2x Ethernet, CAN, mPCIe,  
MIPI-CSI, 1x USB3.0 Device, 4x USB 2.0, LVDS + DVI,  
WLAN/BT, Security chip, RTC,  
-20°C-+70°C, Linux

### Technical Data

Power Supply:	+5V <sub>DC</sub> / ± 5%
Power Consumption:	t.b.d.
Digital I/ O:	max. 66 I/ O ports
Touch Panel:	4-wire, analog resistive and capacitive touch via I <sup>2</sup> C
Interfaces:	2x 1000 Mbit Ethernet 4x UART, 4x I <sup>2</sup> C, 2x SPI, 2x CAN 1x USB3.0 Device, 4x USB2.0 Host 1x Audio (IN/ OUT/ MIC) or I2S 1x miniPCIe with SIM Card Slot 1x MIPI-CSI (Basler connector) 1x WLAN/BT 4.1 LE 1x uSD Card Slot
TFT-LCD Interface:	24bit LVDS, MIPI-DSI, DVI
Memory:	up to 8GB LPDDR4 up to 32GB eMMC NXP i.MX 8MP Cortex-A53
Processor:	(Dual/ Quad)-1.8 GHz & Cortex-M7
OperatingTemperature:	0°C - +70°C (opt. -20°C - +70°C)
Size:	100mm x 72mm x 15mm (l x b x d)
Weight:	about 40g

### Standard Versions/ Order Notations

#### armStoneMX8MP-SKIT-LIN

armStoneMX8MP-V4I-LIN,  
Anschlusskabel und Zugangsdaten zu Dokumentation  
und Software



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