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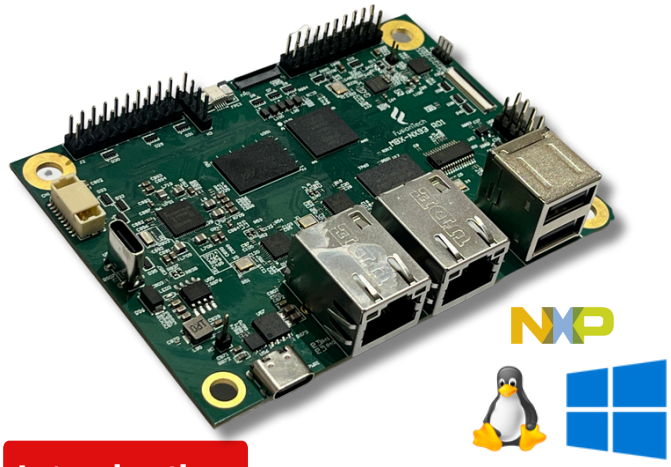
Drive into your future

MBP-NX93

2.5" Pico-ITX board



Features

- ARM Dual Core Cortex A55 processor up to 1.7GHz
- ARM Cortex®-M33 run up to 250 MHz for real-time and low-power processing.
- NPU for Machine learning capability to 0.5TOPS
- Form factor: 100x72mm, Pico-ITX
- Memory support: from 128MB to 2GB
- Multi-Media support: 1x MIPI DSI w/1080p60, 1x LVDS w/720p60, 1x 1080P60 MIPI CSI for camera
- Power Supply via USB-C PD, 9V/12V/15V
- Multi-OS platform support: Linux, Windows
- Use the LVGL Rich Library design a user-friendly interface for easy and intuitive operation

Introduction

MBP-NX93, a cutting-edge Pico-ITX board powered by NXP i.MX93 Application Processor. Featuring an ARM Dual Core Cortex A55 processor up to 1.7GHz and an ARM Cortex®-M33 running up to 250MHz, it offers exceptional performance for real-time and low-power processing. With built-in 0.5TOPS NPU enables advanced AI applications.

MBP-NX93 supports both Linux and Windows with LVGL Library design a user-friendly interface for easy and intuitive operation, offering a versatile development platform. Linux provides robust multitasking capabilities and extensive software support. With LVGL plentiful Library delivers real-time performance and an efficient and friendly graphical interface for resource-constrained environments for intuitive operation. It also supports 1080p60 MIPI DSI, 720p60 LVDS, and 1080p60 MIPI CSI for multimedia applications. Powered via USB-C PD (9V/12V/15V), it ensures efficient power management. The connectivity I/O are included 4x USB 2.0 HS, 1 x USB Type-C OTG, 4x UART, 6x GPIO and 1x external Micro SD Slot for storage, it is wonderful suitable for embedded applications.

MBP-NX93 is Ideal for industrial automation, smart home devices, AI-driven edge computing. It excels in monitoring and controlling machinery in automation, enhancing smart home experiences, and enabling intelligent edge devices like surveillance cameras and facial recognition systems.

Specification		
System	Processor	ARM Dual Core Cortex A55 processor, up to 1.7GHz
	RAM	LPDDR4, from 128MB to 2GB
	Storage	8G/16GB/32GB eMMC
	Display	MIPI DSI w/1080p60, LVDS w/720p60
	Touch	Support via USB/I2C Touch controller
	Camera	1x MIPI CSI, 1080P60
	Ethernet	2x 10/100/1000M Gigabit Ethernet
I/O Interface	USB Port	4x USB 2.0 HS (2x USB Type A, 2x 4-Pin header); 1 x USB Type-C for Debug
	UART	4
	GPIO	support 6x GPIO (I2C/UART)
	RTC	support a CR1120 Battery (included)
	SD Socket	1x Micro SD slot (on the rear side)
Power Input		via USB-C PD, 9V/12V/15V
Form Factor		100x 72mm, Pico-ITX
Operating Temperature		-10°C ~ 70°C
Operating System		Linux, Windows

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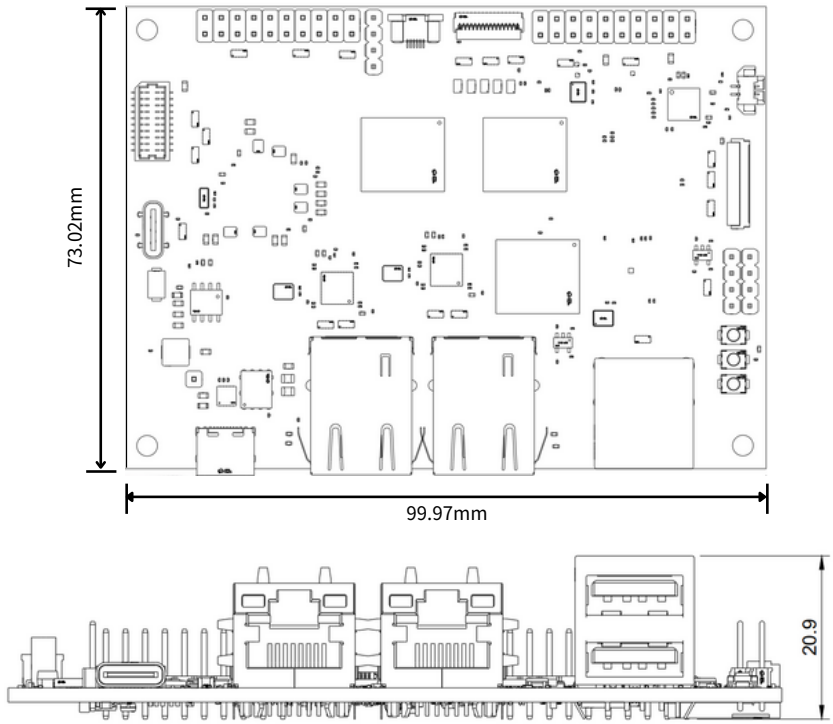
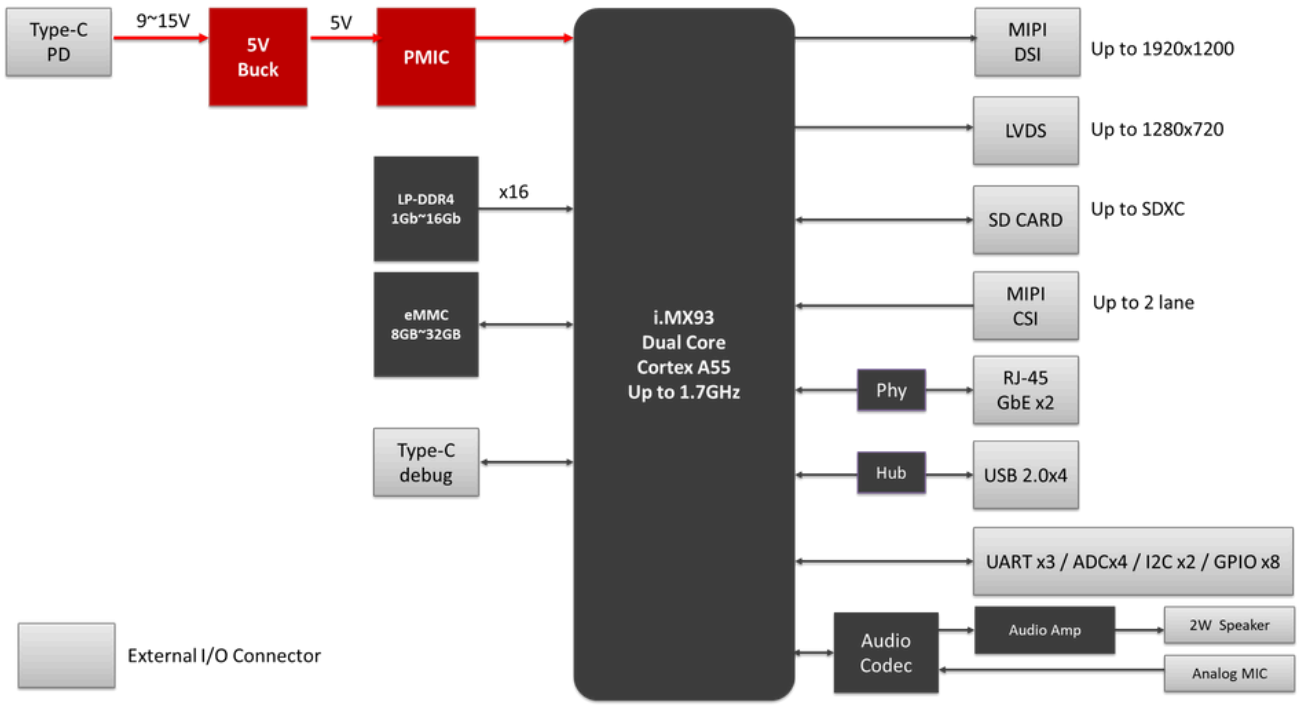
MBP-NX93

Dimension(mm)



Block Diagram



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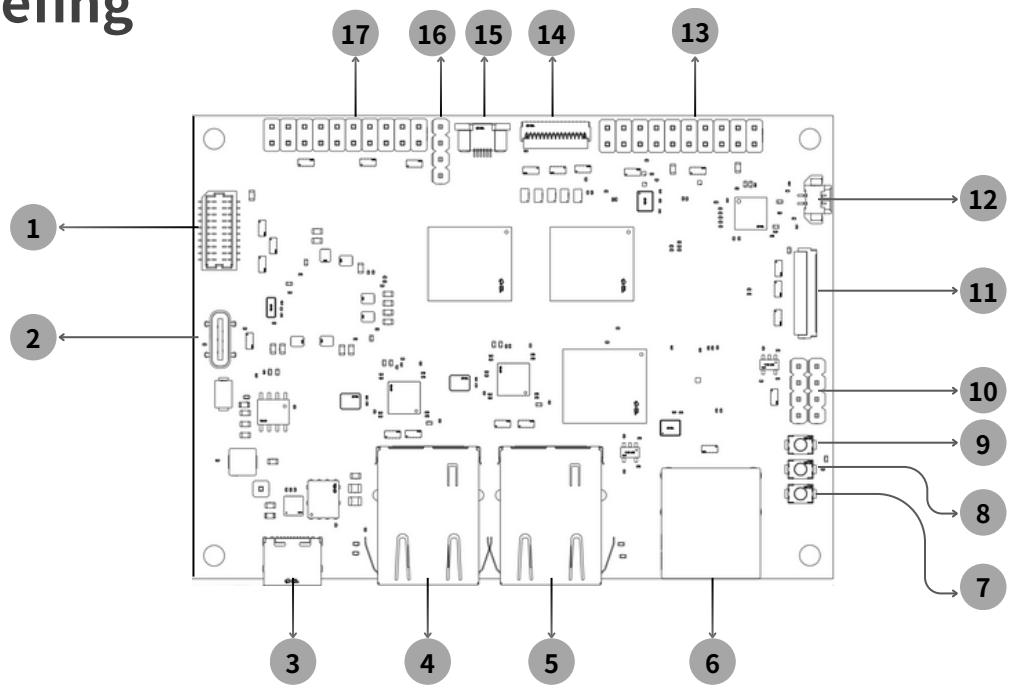
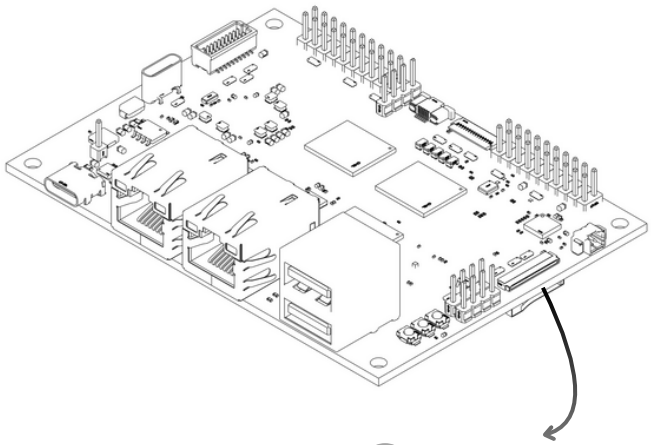
MBP-NX93

I/O Briefing



1. CN1: LVDS
2. USB Type-C for Debug
3. USB-C PD for 9~15V
4. ETH1
5. ETH2
6. USB:2x USB 2.0 Type A
7. SW1:Force Download Mode
8. SW3: ON/OFF Button
9. SW2: Reset Button
10. USB3&4: 2x USB 2.0 HS HOST
11. FPC3: MIPI CSI
12. SPK1: 4 OHM MONO Speaker Out
13. J1: UART & GPIO
14. FPC1: MIPI DSI
15. FPC2: Touch
16. H3: UART
17. J2: ADC&GPIO



18. Micro SD Slot

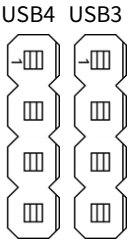
Issued Date: Dec.31, 2024

MBP-NX93

1 CN1: LVDS Connector
2x10-Pin Box Header, 1.0mm

PIN	Assignment	PIN	Assignment
1	VOUT=PD IN	2	5V OUT
3	VOUT=PD IN	4	5V OUT
5	LVDS CLKp	6	LVDS D2p
7	LVDS CLKn	8	LVDS D2n
9	GND	10	GND
11	LVDS D0p	12	LVDS D3p
13	LVDS D0n	14	LVDS D3n
15	GND	16	GND
17	LVDS D1p	18	PWM
19	LVDS D1n	20	EN

9 USB 3&4: 2 x USB 2.0 HS HOST
1x4-Pin Header, 2.54mm pitch



PIN	Assignment
1	5V OUT
2	USB D-
3	USB D+
4	GND

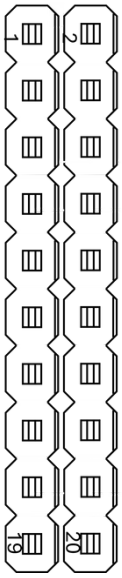
11 FPC3: MIPI CSI
1x24-Pin FPC Connector, 0.5mm

PIN	Assignment	PIN	Assignment
1	NC	13	XCLK
2	AGND	14	CSI_D1n
3	I2C-SDA	15	GND
4	AVDD(3.3V)	16	CSI_CKp
5	I2C-SCL	17	NC
6	RESET	18	CSI_CKn
7	NC	19	NC
8	POWER DOWN	20	CSI_D0p
9	NC	21	NC
10	DVDD (1.5V)	22	CSI_D0n
11	DOVDD(3.3/1.8)	23	AF-VDD
12	CSI_D1p	24	VF-VSS

12 SPK1: 4 OHM MONO Speaker Out
1x2-Pin 1.25mm connector

PIN	Assignment
1	SPK+
2	SPK-

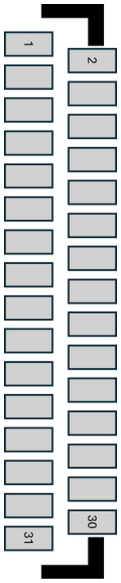
13 J1:UART & GPIO
1, 2x10-Pin Header, 2.54mm pitch



PIN	Assignment	PIN	Assignment
1	5V OUT	2	5V OUT
3	UART1 RX	4	GPIO00
5	UART1 TX	6	GPIO01
7	GND	8	GND
9	5V OUT	10	5V OUT
11	UART2 RX	12	GPIO02
13	UART2 TX	14	GPIO21
15	GND	16	GND
17	3.3V OUT	18	3.3V OUT
19	3.3V OUT	20	3.3V OUT

14 FPC1: MIPI DSI

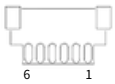
1x31-Pin FFC Connector, 0.3mm pitch
FH35C-31S-0.3SHW(50)



PIN	Assignment	PIN	Assignment
1	LED_A	2	LED_A
3	LED_A	4	NC
5	LED_K	6	LED_K
7	LED_K	8	LED_K
9	GND	10	GND
11	MIPI D2p	12	MIPI D2n
13	GND	14	MIPI D1p
15	MIPI D1n	16	GND
17	MIPI CLKp	18	MIPI CLKp
19	GND	20	MIPI D0p
21	MIPI D0n	22	GND
23	MIPI D3p	24	MIPI D3n
25	GND	26	1.8V
27	RESET	28	GND
29	1.8V	30	3.3V
31	3.3V		

15 FPC2: Touch

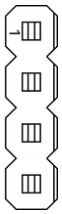
1x6-Pin FFC Connector, 0.5mm



PIN	Assignment
1	GND
2	TP_INT
3	TP_RET
4	3.3V
5	I2C2_SDA
6	I2C2_SCL

16 H3: UART

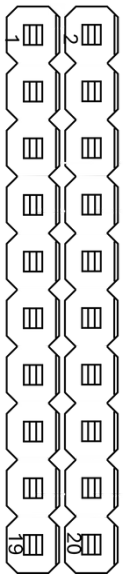
1x4-Pin Header, 2.54mm pitch



PIN	Assignment
1	5V OUT
2	UART3 RX
3	UART3 TX
4	GND

17 J2:ADC & GPIO

1, 2x10-Pin Header, 2.54mm pitch



PIN	Assignment	PIN	Assignment
1	5V	2	3.3V
3	GPIO3_30	4	GND
5	GPIO3_29	6	ADC0
7	GPIO3_28	8	GND
9	GPIO3_31	10	ADC1
11	GND	12	GND
13	3.3V	14	ADC2
15	GPIO12	16	GND
17	GPIO13	18	ADC3
19	GND	20	GND