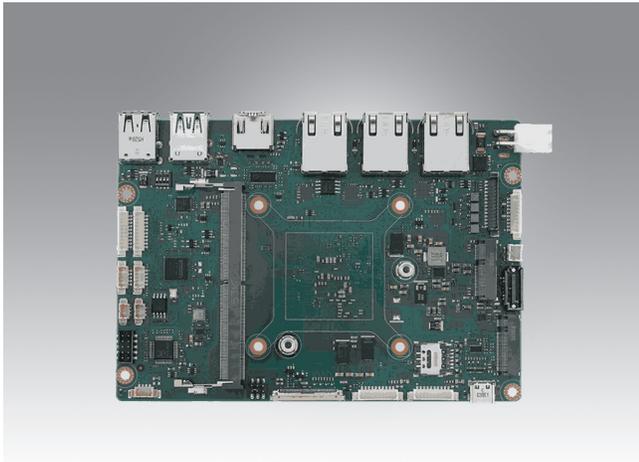# MIO-5854

Intel Processor N-series N355; N150 (Code Name: Twin Lake)

Features

- Intel Processor N-series N355 and N150
- DDR5-4800 up to 16GB
- 4x LAN, 4x USB, 4x UART, 2x CAN-FD, 16bit GPIO, I2C/SMBus
- 2x M.2 Expansions: E-Key 2230, B-Key 2280
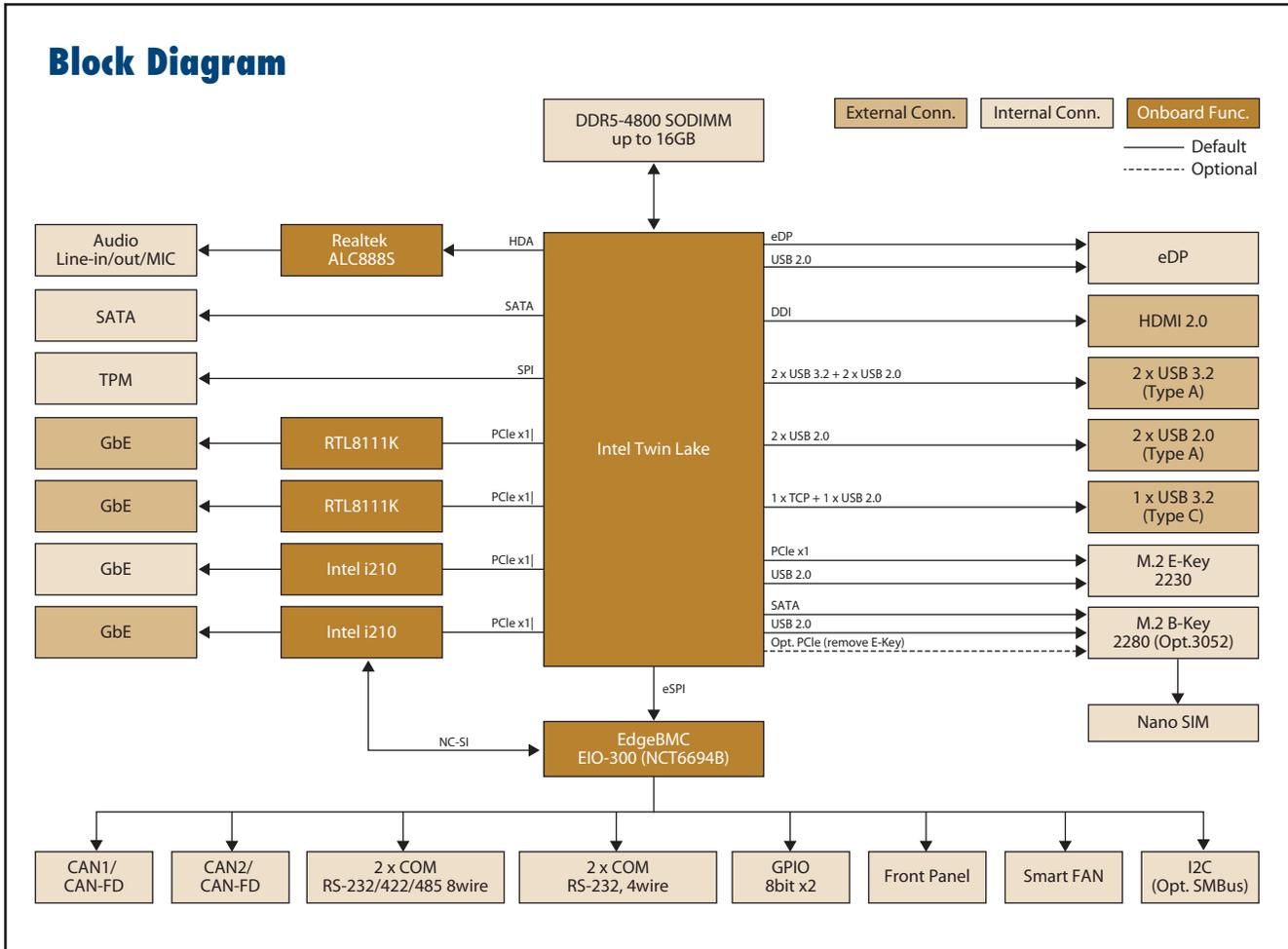- Support EdgeBMC for OOB(Out-of-Band) remote control

Software APIs:

| GPIO | SMBus/I²C | Watch Dog Timer | Backlight On/Off | Brightness |

Ubuntu · Windows 10 · DeviceOn · EdgeBMC · CE · FC

Specifications

Platform	Processor	N355	N150
	Max. Frequency	3.9 GHz	3.6 GHz
	Base Frequency	1.9 GHz	0.8 GHz
	Core/Tread	8/8	4/4
	LLC	6MB	6MB
	CPU TDP	15W	6W
	Chipset	Intel® Chipset (SoC Integrated)	
	BIOS	AMI UEFI 256Mbit	
Memory	Technology	DDR5-4800	
	Max. Capacity	Up to 16GB	
	Channel/Socket	Single Channels / One Socket	
Graphics	Controller	Intel® Graphics	
	Max. Frequency	1.35 GHz	1.0 GHz
	Base Frequency	1.0 GHz	400 MHz
	3D/HW Acceleration	Open GL 4.6, Vulkan 1.2 HW Encode: AVC,HEVC/VP9/SCC HW Decode: AVC,HEVC/VP9/SCC,AV1	
Display I/F	eDP	1 x eDP 1.4	
	HDMI	1 x HDMI 2.0	
	Multiple Display	2 simultaneous displays: eDP/HDMI	
Ethernet	Controller	LAN1/LAN2: Realtek 8111k; LAN3/LAN4: Intel i210	
	Speed	LAN1/LAN2/LAN3/LAN4: 1Gbps	
External I/O	Ethernet	3 x RJ-45	
	HDMI/USB-C	1/1	
	USB3.2/2.0	2/2	
	Power DC-Jack	4-pin 90D ATX connector	
Internal I/O	SATA	1 x SATA GenIII 6.0Gbps	
	Serial Bus	1 x I2C (Opt. SMBus)	
	COM Port	2 x RS-232/422/485(8-wire) , 2 x RS-232(4-wire)	
	GPIO	16-bit general purpose input output I/O	
	LAN	14-pin internal connector	
	Audio	Realtek ALC888S, Line-in/Line-out/MIC	
	Invertor	5V @ 2A	
	CAN Bus	2 x CAN-FD	
	Fan	4-wire smart fan	
	Front Panel Control	Power-on, Reset, Buzzer, CaseOpen	
Board Feature	EdgeBMC OOB	LAN3: Support EdgeBMC Out-of-Band(OOB) remote control	
	Watchdog Timer	65536 level, 0~65535 sec	
	TPM	Discrete TPM2.0 (*optional)	
Expansion	M.2 E-Key	1 x E-Key 2230 (PCIe x1, USB2.0)	
	M.2 B-Key	1 x B-Key 2280 (SATA, USB2.0,*optional PCIe x1) w/ Nano-SIM	
Power	Supply Voltage	Vin: DC 12~24V ± 10%; RTC Battery: Lithium 3V/200mAH	
	Connector	ATX 4pin 90D (*BOM Option to ATX 4pin 180D or DC-IN Jack by request)	
	Power Management	AT, ATX	
Environment	Temperature	0 ~ 60 °C (32 ~ 140 °F) with 0.7m/s airflow	
	Humidity	Operating: 40° C @ 95% relative humidity, non-condensing Storage: 60° C @ 95%relative humidity, non-condensing	
	Vibration Resistance	3.5 Grms	
Certification	EMC	CE, FCC Class B	
Mechanical	Dimensions	146 x 102 mm (5.7" x 4")	

*Note: Optional function support by request

All product specifications are subject to change without notice.   Last updated: 23-Jan-2026

Block Diagram

DDR5-4800 SODIMM up to 16GB

| External Conn. | Internal Conn. | Onboard Func. |

—— Default
------ Optional

Audio Line-in/out/MIC ← Realtek ALC888S ← HDA ← **Intel Twin Lake**

Intel Twin Lake → eDP → eDP
Intel Twin Lake → USB 2.0

SATA ← SATA ← Intel Twin Lake
Intel Twin Lake → DDI → HDMI 2.0

TPM ← SPI ← Intel Twin Lake
Intel Twin Lake → 2 x USB 3.2 + 2 x USB 2.0 → 2 x USB 3.2 (Type A)

GbE ← RTL8111K ← PCIe x1| ← Intel Twin Lake
Intel Twin Lake → 2 x USB 2.0 → 2 x USB 2.0 (Type A)

GbE ← RTL8111K ← PCIe x1| ← Intel Twin Lake
Intel Twin Lake → 1 x TCP + 1 x USB 2.0 → 1 x USB 3.2 (Type C)

GbE ← Intel i210 ← PCIe x1| ← Intel Twin Lake
Intel Twin Lake → PCIe x1 / USB 2.0 → M.2 E-Key 2230

GbE ← Intel i210 ← PCIe x1| ← Intel Twin Lake
Intel Twin Lake → SATA / USB 2.0 / Opt. PCIe (remove E-Key) → M.2 B-Key 2280 (Opt.3052) → Nano SIM

Intel Twin Lake → eSPI → EdgeBMC EIO-300 (NCT6694B)
NC-SI → EdgeBMC EIO-300 (NCT6694B)

EdgeBMC → CAN1/CAN-FD | CAN2/CAN-FD | 2 x COM RS-232/422/485 8wire | 2 x COM RS-232, 4wire | GPIO 8bit x2 | Front Panel | Smart FAN | I2C (Opt. SMBus)

Ordering Information

Part No.	CPU	Core	TDP	GPU	GPU Max. Frequency	Thermal Solution	Operating Temperature
MIO-5854N-P9A1	N355	8	15W	Intel® Graphics	1.35 GHz	Passive	0~60° C
MIO-5854N-P6A1	N150	4	6W	Intel® Graphics	1 GHz	Passive	0~60° C

Packing List

Part No.	Description	Quantity
	MIO-5854 SBC	1
1700031583-01	SATA Power Cable 25cm	1
1700006291	SATA Cable 30cm	1
1700019584-01	Audio Cable 20cm	1
1700030404-01	COM Cable 20cm	2
1970005854T001	MIO-5854 CPU Heatsink (Passive Solution)	1

Rear I/O View

Optional Accessories

Part No.	Description
1970005925T001	MIO-5854 CPU Heatspreader
1960103315N020	M.2 3042/3052 Extension Bracket
1700033611-01	Internal LAN Cable 15cm

Embedded OS/API

OS	Part No.	Description
WIN11	20706WLE1S0117	Windows 11 IoT Enterprise 2024 LTSC 64 bit
Ubuntu	TBD	Ubuntu Desktop 24.04 LTS
Software API	Download by website	SUSI v5.0