User Manual

SXC-ARL30

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MAXIMIZING YOUR COMPUTING PRODUCTIVITY

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Warning

1. Before using the product, carefully read the manual to ensure proper installation and operation.
2. If you are not ready to install any extension card, store it in an anti-static protective bag to prevent damage.
3. To discharge any static electricity, briefly touch a grounded metal object before removing the extension card from the protective bag.
4. Always wear anti-static gloves and handle the card by its edges to avoid damaging sensitive components.
5. Verify that the power supply voltage is correct before connecting the motherboard to the power supply.
6. To prevent electric shock or damage, always turn off the AC power or unplug the power cord before removing or reconfiguring the motherboard or any components.
7. Unplug the AC power cord from the outlet before relocating the motherboard or any components.
8. Ensure all power cords are unplugged before connecting or disconnecting any equipment to avoid electrical hazards.
9. Wait at least 30 seconds after powering off the system before powering it on again to prevent unnecessary wear.
10. If any issues arise during operation, consult a qualified professional for assistance.
11. This product may cause radio interference in certain environments; if necessary, users should take appropriate measures to mitigate such interference.

SXC-ARL30

User Manual

(Version1.0)

Version:		
NO.	Description	Issue Date:
V1.0	Initial Version (CN)	2024/10/25
V1.0	Initial Version (EN)	2025/06/06

Contents

Chapter 1 Product Introduction

1.1 Brief Introduction

The SXC-ARL30 is an embedded PC powered by the Intel Meteor Lake/Arrow Lake-U/H platform. It offers high computing performance with a choice of passive or active cooling solutions, ideal for industrial and commercial applications.

1.2 Parameters

Processor: Intel® Core™ Ultra 5

CPU	Cores/Threads	Max Turbo Frequency (P-core/ E-core)	Base Frequency (P-core/ E-core)	Cache	TDP
125H	14C/18T	4.5GHz/3.6GHz	1.2GHz/700MHz	18 MB	28W
125U	12C/14T	4.3GHz/3.6GHz	1.3GHz/700MHz	12MB	15W

TDP:

125H	Configured at 28W by default. Both sustained (PL1) and boost (PL2) power limits are set to 28W.
125U	Configured at 15W by default. Both sustained (PL1) and boost (PL2) power limits are set to 15W.

Memory: 2 x SO-DIMM DDR5-5600MHz slots, supporting dual channel and up to 96GB maximum capacity.

GPU: Integrated graphics (dependent on CPU). Supports display output through 4 x HDMI 2.0b ports (HDCP 2.3) and 1 x USB Type-C port (DP 1.4 supported).

125H	Intel® Arc™ graphics. Max Dynamic Frequency: 2.2 GHz
125U	Intel® graphics. Max Dynamic Frequency: 1.85 GHz

NPU: Intel® AI Boost. Supports sparsity and Windows Studio Effects. For AI software frameworks supported by the NPU, please refer to the table below.

125H	OpenVINO™, WindowsML, DirectML, ONNX RT
125U	OpenVINO™, WindowsML, DirectML, ONNX RT, WebGPU

Storage:

- 1 x M.2 Key M slot (labeled M.2_N on board) for 2280 NVMe SSD at PCIe x4 speed.
- 1 x M.2 Key B slot (labeled M.2_SW on board) for 2280 SATA3.0 SSD or 3042 4G module.

Expansion: 1xM.2 Key_E 2230 slot (labeled as M.2_E on board) for Wi-Fi and Bluetooth modules (support PCIE/USB2.0/CNVi).

Nano SIM: 1x Nano SIM Slot. The slot supports Nano SIM and enables 4G communication when used with a compatible M.2_4G module.

Serial I/O (COM Ports): 2xCOM interfaces, with RS232 configuration by default and RS485 optional.

USB Interfaces:

- 4 × USB 3.2 Gen 2 Type-A ports (up to 10 Gbps)
- 2× USB 2.0 Type-A ports (up to 480 Mbps)
- 1 × USB Type-C port
    - Supports USB 3.2 Gen 2 (up to 10 Gbps)
    - Supports DisplayPort 1.4 (DP 1.4)

MCU Timer: Equipped with a MCU Timer, allowing users to schedule independent power on/off times for each day of the week.

Wired Control: 1x Wired Control Switch.

Ethernet: 2× RJ45 Ethernet ports for high-speed network connectivity

- 1 × Intel® I219 – Supports up to 1.0 GbE
- 1 × Intel® I226 – Supports up to 2.5 GbE

Audio: Realtek ALC897 High-Definition Audio Codec, 1xCTIA Audio Jack, supports Line-out plus Mic-in.

Board Dimension: 177.5mm x 132mm

Enclosure Dimension: 190mm x 150mm x35mm (LxWxH)

Power: 19V/20V DC-IN, 9V-35V Phoenix_2PIN optional

Cooling Method:

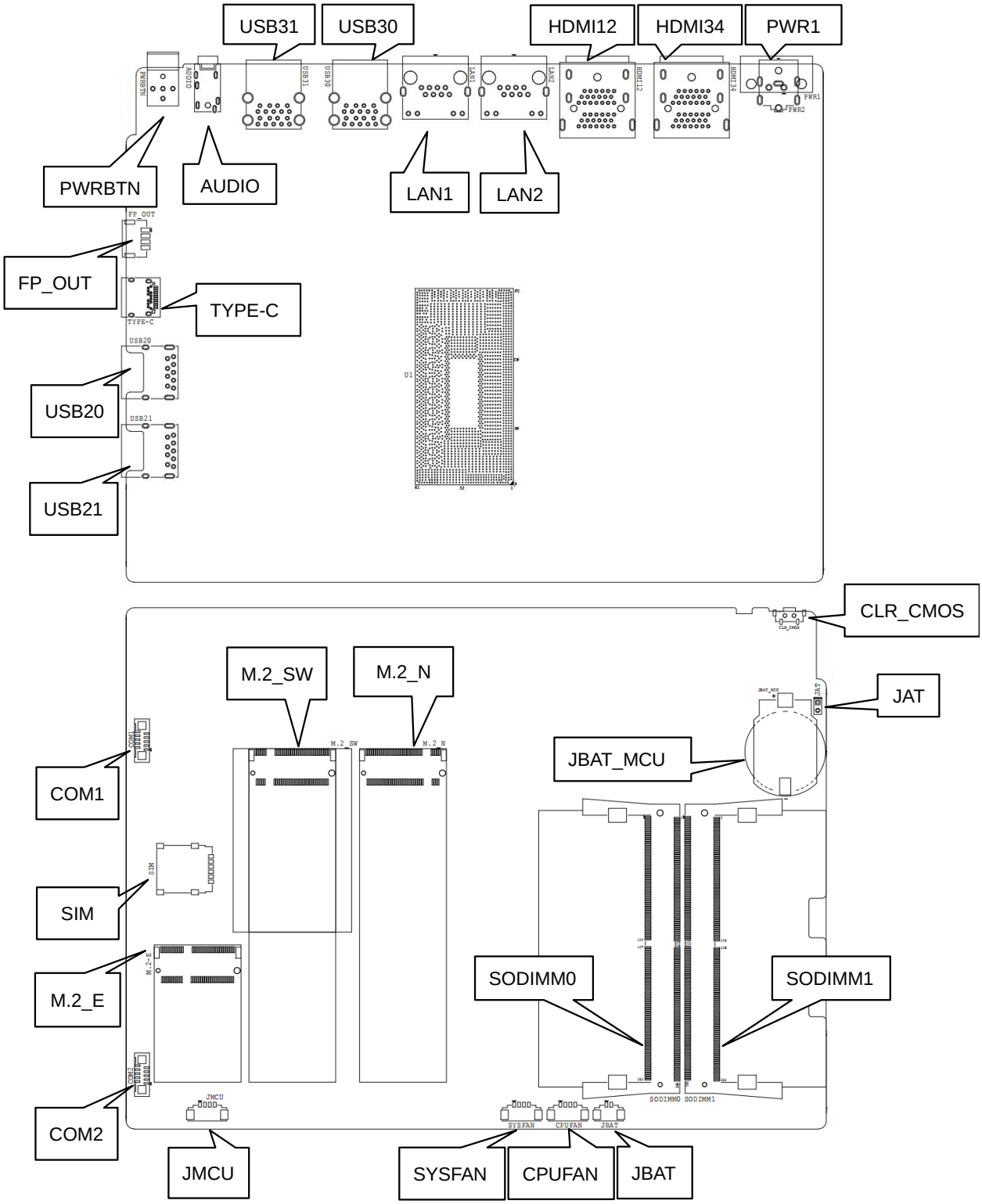
- Passive: Intel Meteor Lake/Arrow Lake-U Series Processors
- Active: Intel Meteor Lake/Arrow Lake-H Series Processors

Operating Temperature: -20℃~60℃

Storage Temperature: -40℃~80℃

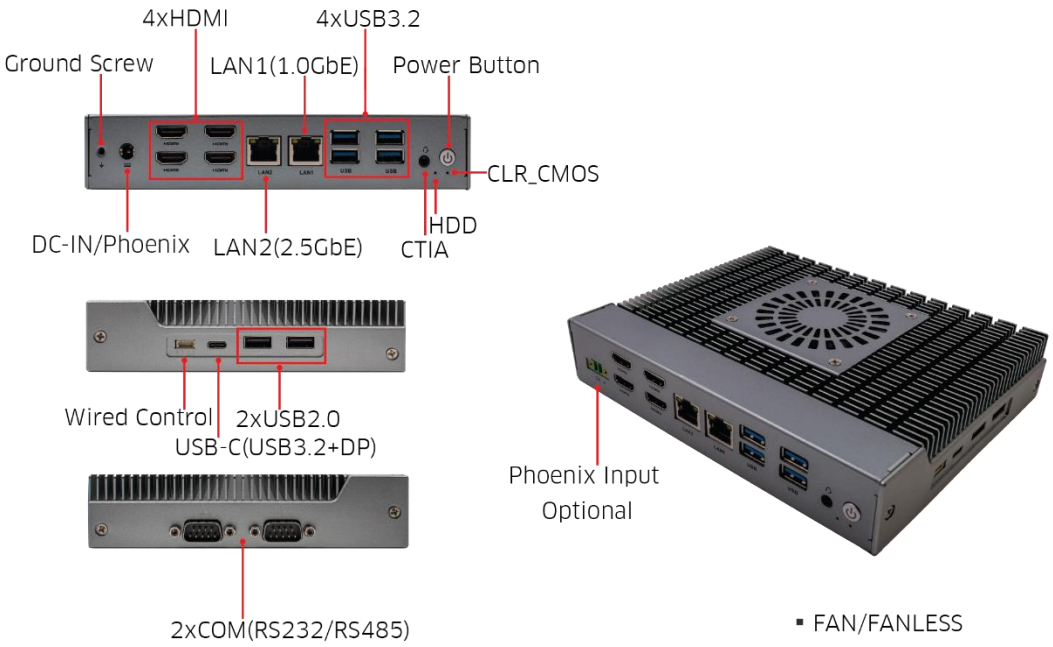
1.3 Connector Diagram

ARL-30 Motherboard



1.4 I/O Interfaces

SXC-ARL30 Embedded PC



Chapter 2 Hardware

2.1 Installations

Please refer to the following steps for installations:

1. Read the user manual carefully to make sure all the adjustments on the SXC-ARL30 are correct.
2. Installing the Memory:
   - Press the ejector tab of the memory slot outwards with your fingertips.
   - Hold the memory module and align the key to the module with that on the memory slot.
   - Gently push the module into the slot until the ejector levers return completely to the closed position, holding the module in place when the module touches the bottom of the slot. To remove the module, press the ejector levers outwards to unseat the module.
3. Installing the expansion cards:
   - Locate the expansion slots and remove the screw, insert the cards into the slot at a 45-degree angle then attach the screw to the expansion cards, gently press down on it then install the screw back.
4. Connect all signal wires, cables, panel control wiring, and power supplies.
5. Start the computer and complete the setup of the BIOS program.

Attention!!!

The Motherboard's components are integrated circuits and can easily be damaged by Electrostatic Discharge or ESD; therefore, please follow the instructions:

- Hold the board's edge when handing, and do not touch onboard pins, components, or plug sockets.
- When touching integrated circuit components (such as CPU, RAM, etc.), please wear an anti-static wrist strap/glove to avoid electrostatic discharge damage to the board or other sensitive components.
- Before installing the integrated circuits/sensitive components, place the sensitive components in anti-static bags to keep them safe from ESD.
- Please make sure the power switch is OFF before plugging the power plug.

2.2 Jumper Setting

Please configure the jumpers according to your requirements before installing the hardware.

How to identify the first header of jumpers and pins: Observe the mark beside the jumper or pins and find the header marked by “1” or bold line or triangular symbol. Or observe the rear panel and the header with a square solder pad is the first header.

2.3 Memory Slots

The board provides two SO-DIMM DDR5-5600 MHz slots and supports dual-channel memory with a maximum capacity of up to 96 GB.

Note: When installing memory modules, carefully hold the module by its edges and align the notch (key) on the module with the key in the slot. Ensure that the selected memory module matches the board’s specifications to ensure optimal performance and compatibility.

2.4 Display Interfaces (Screen Printing: HDMI12, HDMI34)

The board features 4xHDMI2.0b (supports HDCP2.3) interfaces for four 4K resolution at 60Hz.

2.5 Storage Interfaces

The board features 1xM.2_key M slot (Screen printing: M.2_N) for 2280 NVMe (PCIe X4 speed) SSD. And 1xM.2_key B slot (Screen printing: M.2_SW) for 2280 SATA SSD or 3042 4G modules.

2.6 Expansion Slots

The board features 1x M.2 Key E slot (Screen Printing M.2_E) for 2230 Wi-Fi and Bluetooth Modules (supports PCIe/USB2.0/CNVi).

1x Nano SIM Slot. The slot supports Nano SIM and enables 4G communication when used with a compatible M.2_4G module.

2.7 USB Interfaces

The board offers 4xUSB 3.2 Gen 2 Type-A ports, each supporting data transfer speeds of up to 10 Gbps, and 2x USB 2.0 Type-A ports with speeds up to 480 Mbps. It also features 1xUSB Type-C port, which supports USB 3.2 Gen 2 (up to 10 Gbps) and DisplayPort 1.4 (DP 1.4) as display output.

2.8 LAN

The board features two RJ45 LAN interfaces, powered by two high-speed network controllers.

- LAN1: Intel® I219 – Supports up to 1.0 GbE
- LAN2: Intel® I226 – Supports up to 2.5 GbE

Both LAN1 and LAN2 support Wake-on-LAN (Magic Packet Wake-Up). LAN1 (Intel® I219) additionally supports UEFI PXE network boot. To enable UEFI PXE boot, please enter the BIOS setup and set IPv4 PXE Support to Enabled. Note!!! The Intel® I226 network controller supports MAC address programming only once.

LED Status Indicators:

LI_LED Status (Green)	Function	ACT_LED Status (Orange)	Function
Always on	Network Connected	Flashing	Data transmission

2.9 COM

The board is equipped with two serial ports, configured as RS232 by default. Both ports can be switched to RS485 mode through hardware changes.

COM1, COM2(RS232/RS485) Pin Definition:

Pin	RS232	RS485
1	DCD	DATA-
2	RXD	DATA+
3	TXD	(NC)
4	DTR	(NC)
5	GND	GND
6	DSR	(NC)

7	RTS	(NC)
8	CTS	(NC)
9	RI	(NC)

2.10 Board Power Supply (Screen printing: PWR1, PWR2)

The board supports a 19V/20V DC-in for power supply, 9-35V 2-Pin(3.81mm) Phoenix optional.

2.11 CPU Fan Socket (Screen Printing: CPUFAN)/ System Fan Socket (Screen Printing: SYSFAN)

The board provides a 5V CPU fan socket with an optional choice of 5V system fan socket. The pin definitions for FAN1 and FAN2 can be modified by adjusting the resistor configuration on the board.

CPU Fan Socket Pin Definition (Screen Printing: CPUFAN)

Pin	Signal (when the resistor is placed at RF3 and RF4)	Signal (when the resistor is placed at RF1 and RF2)
1	VCC	GND
2	GND	VCC
3	TAC	TAC
4	CTL	CTL

SYSTEM Fan Socket Pin Definition (Screen Printing: SYSFAN)

Pin	Signal (when the resistor is placed at RF7 and RF8)	Signal (when the resistor is placed at RF5 and RF6)
1	VCC	GND
2	GND	VCC
3	TAC	TAC
4	CTL	CTL

2.12 Audio Interface(Screen Printing: AUDIO, JAUD)

The system features the Realtek ALC897 HD Audio Codec, delivering high-fidelity audio via a 3.5mm CTIA-compliant combo jack (Line-out/Mic-in). It also integrates an onboard dual-channel amplifier output header, enabling direct connection to passive speaker systems without the need for external amplification.

Two-in-one (CTIA) Audio Jack:

2.13 Hardware Auto Start Optional (Screen Printing: JAT)

By default, the motherboard does not have a hardware auto start function. An optional hardware auto start function can be enabled by shorting the jumper cap, which supports power-on self-start (pin spacing: 2.0mm).

JAT (Screen Printing: JAT)

Setting	JAT
Close	Hardware Auto Start

2.14 MCU Timer

The board features an integrated MCU timer, allowing users to set an independent power on/off schedule for each day of the week.

MCU Program Burning Interface (Screen Printing: JMCU)

Pin	Signal
1	VCC
2	GND
3	DI0
4	CLK

2.15 Wired Control Switch Interface (Screen Printing: FP_OUT)

Pin	Signal
1	SW+
2	SW-
3	D-
4	D+

2.16 CMOS Clearance/Retention (Screen printing: CLR_CMOS)

CMOS is powered by onboard button batteries. Clearing CMOS will permanently remove the previous system settings and restore the board system to original settings (factory settings).

Step 1: Turn off the PC and disconnect the power.

Step 2: Press CLR_CMOS for 15 seconds then disconnect.

Step 3: Restart the device, press the <DEL> button to enter the BIOS, load the optimal default value, save, and exit the settings.

⚠ **Attention!!!** Do not clear the CMOS while the computer is powered on, as this may damage the motherboard.