



Intel® Edge Scalable Design based on Intel® Core™ Ultra Mobile Processor (Series 3) for Robotics

Product Brief

April 2026



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Revision History

Date	Revision	Description
April 2026	1.0	Initial release.

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1.0 Introduction

The Robinson Bay Reference Design is an advanced platform developed by Intel, featuring the Intel® Core™ Ultra Mobile Processor (Series 3) for Robotics use-cases, not limited to humanoid, quadrupeds, robot vision controller, autonomous mobile robots, stationary robots, and more.

Key features of the Robinson Bay Reference Design include:

- **Modular based (Compute board & Carrier board) Form Factor:** Compute board 87mm x 100mm, Carrier board 130mm x 130mm.
- **400 Pins Board to Board Connector:** connect high speed signals (up to Gen 5 PCIe) between Compute and Carrier board
- **LPDDR5x 8533MT/s Dual Channels:** It operates two memory channels in parallel to boost bandwidth and improve performance per watt for high-throughput workloads.
- **Quad Intel® Ethernet Controller I226:** Offers advanced networking capabilities with quad Intel® Ethernet Controller I226, supporting high-speed data transmission and reliable connectivity.
- **EC-Less Design:** Support power sequence control and power button using SIO
- **Supports 8 GMSL Fakra Connectors:** with onboard GMSL Deserializer Chip from MAX96724
- **1 × MIPI CSI-CPHY Connectors** to enable high-speed camera and video-input expansion, supporting direct MIPI camera modules as well as HDMI capture through MIPI CSI bridge devices
- **Quad USB3.2 type C Connector:** support EC-less Type C USB3.2 Gen 1 design
- **Raspberry Pi Pinout Header:** GPIO, PWM, I2C, UART interfaces
- **CAN Bus Header:** 2x CANFD ports through USB to CAN bridge

1.1 Terminology

Table 1. Terminology

Term	Description
HDMI	High-Definition Multimedia Interface
TSN	Time-Sensitive Networking

Term	Description
MIPI CSI	Mobile Industry Processor Interface Camera Serial Interface
EC	Embedded Controller
SIO	Super Input Output
eSPI	Enhanced Serial Peripheral Interface
DP	Display Port
CANFD	Controller Area Network Flexible Data-rate
GMSL	Gigabit Multimedia Serial Link

1.2 Reference Documents

Log in to the Resource and Documentation Center (rdc.intel.com) to search for and download the document numbers listed in the following table. Contact your Intel field representative for access.

Note: NDA Customers can access Robinson Bay Design Collaterals after obtaining a Design Licensing Agreement from Intel.

Table 2. Robinson Bay Reference Documents

Document	Document No./Location
Robinson Bay Documents	
Gold Deck	869076
User and Enabling Guide	869082
BIOS White Paper	871688
Robinson Lake (Compute Board) Documents	
Schematics PDF	867535
Schematics – Cadence	867534
Schematics – OrCAD	866905
Bill of Materials (BOM)	869034
Board Layout Files	867534
Tape Out Manufacturing Files	869035



Document	Document No./Location
Pelican Bay (Carrier Board) Documents	
Schematics PDF	869077
Schematics – OrCAD	869078
Bill of Materials (BOM)	869080
Board Layout Files	869079
Tape Out Manufacturing Files	869081

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2.0 Robinson Bay Reference Design Specifications

Intel's Robinson Bay Reference Design is an advanced platform built around the Intel® Core™ Ultra Mobile Processor (Series 3), utilizing a modular two-board architecture with a 100mm x 87mm compute board and a 130mm x 130mm carrier board form factor.

The following section describes the high-level details and specifications for this robotic platform.

Figure 1. Robinson Bay Reference Design Landing Zone

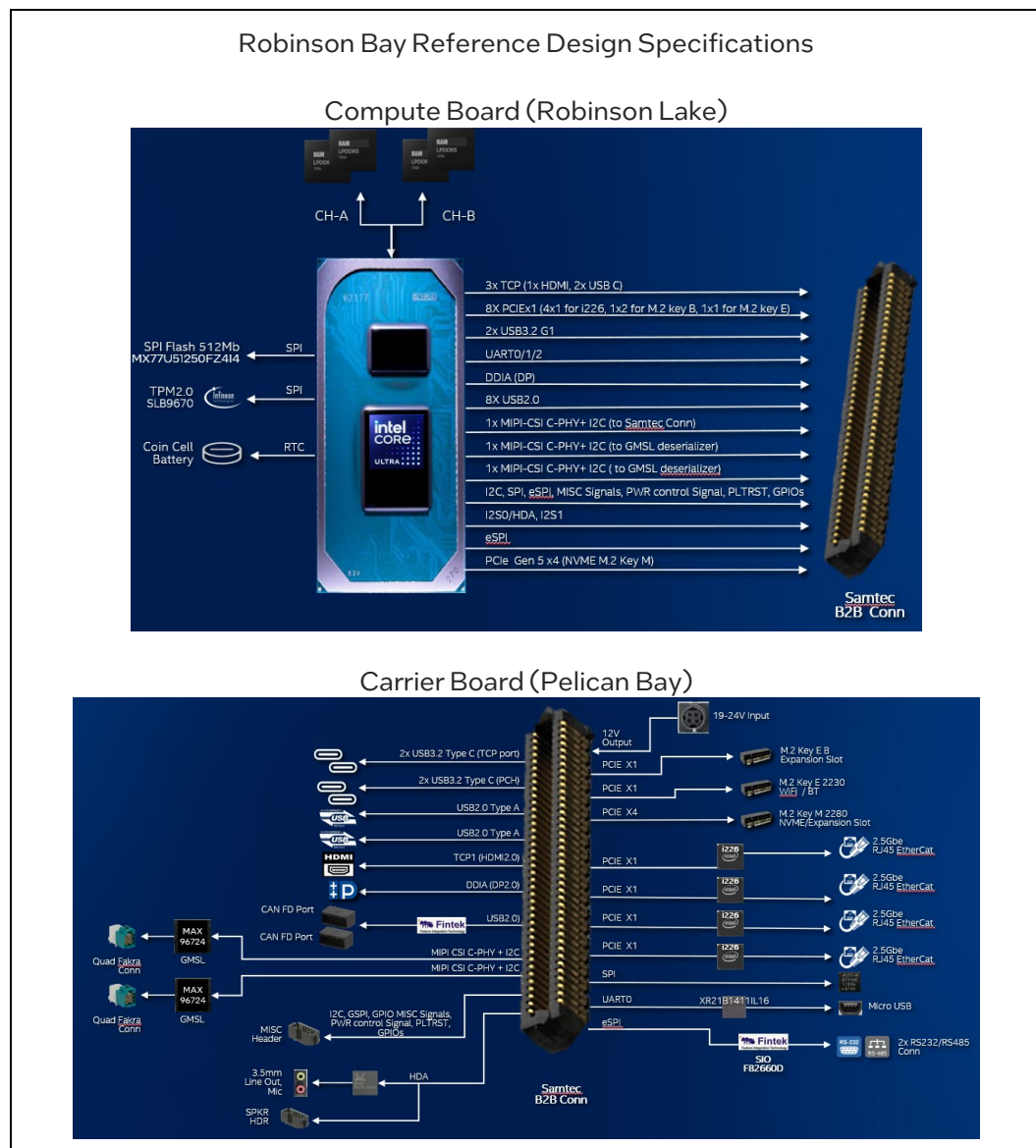


Table 3. Technical Specification Summary

Specification	Details
SoC	Intel® Core™ Ultra Mobile Processor (Series 3)
Dimensions	Compute Board (Robinson Lake): 100mm x 87mm Carrier Board (Pelican Bay): 130mm x 130mm
Layers	Compute Board (Robinson Lake): Type 4 PCB stack up, 14 Layer Carrier Board (Pelican Bay): Type 3 PCB stack up, 16 Layer
Memory	LPDDR5x MD Dual Channels (8533MT/s, NON ECC, 64GB)
Display Out	1x Standard HDMI Connector 1x Standard DP++ Connector
Storage	1x M.2 Key M 2280 NVME [PCIe x4] 1x M.2 Key B 2242/2280 [PCIe] 512Mb SPI Chip [MX77U51250FZ4I42]
USB	4x USB 3.2, Type-C Connector (2-TCP, 2-USB3 Mux) 2x USB2, Type-A Connector
Connectivity	4x Intel® Ethernet Controller I226 (2.5Gb) 1x M.2 Key E 2230 for WiFi/ Bluetooth® 2x M.2 Key B 2242/2280 for WWAN
Super IO	eSPI Super IO [F82660D]
Headers	SPI Socket eSPI Header Fan Header 2x RS232 Header (SIO) 1x 40pins Raspberry Pi Header SPKR Header
Audio	Realtek* ALC897 (HDA) 3.5mm Line Out + Microphone SPKR Header
MIPI CSI	2x Quad Fakra connector (MAX96724G GMSL Deserializer) 1x Samtec 60-pins Connectors (C-PHY with 12V)
Indicator	Power button, Reset button, 3x LEDs
Security	TPM SLB9670XQ2.0
Power	19V, 18.9A input Discrete Solution
Chassis	With Chassis
Cooling	Active Solution with Fan
Operating Temperature	Operating: 0 ~ 50 °C
OS	Windows* 11, Linux*, Ubuntu*

3.0 Call to Action

To obtain Robinson Bay design documents from Intel, an NDA (Non-Disclosure Agreement) and Design Licensing Agreement must be signed. This ensures compliance with legal and corporate policies while facilitating seamless collaboration between your company and Intel.

Approach a dedicated FAE to obtain the required design files.

For our existing customers, please contact your Intel sales representative for more information about these agreements and how to proceed.

If you are new to Intel, please contact us at <https://builders.intel.com/contact-us>.

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