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5 mins for
everyone to join

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Live

BRAV-7823 Robot Controller Based on Intel® Core™ Ultra 3 Series New Product Launch



BRAV-7823

Speaker



Reese Li

Customer Solution Manager
JHCTECH Shenzhen Office

New Product Launch Announcement

Time	Agenda
16:00 ~ 16:05	Opening Chi Wang, Marketing Manager, Shenzhen Office
16:05 ~ 16: 25	BRAV-7823 Robot Controller Based on Intel® Core™ Ultra 3 Series Reese Li, Customer Solution Manager, Shenzhen Office
16:25~ 16:35	Q&A

Robot Controller Based on Intel® Core™ Ultra 3 Series

BRAV-7823





- 01 Panther Lake Platform Overview**
- 02 BRAV Series Roadmap**
- 03 BRAV-7823 Key Features**
- 04 BRAV-7823 Target Markets**

CONTENTS



INTRODUCING

Panther Lake

Built for scale

More
designs

More
price points

More
experiences

intel
18A

Architectural Learnings for Scalability

Lunar Lake

x86 power
efficiency



Arrow Lake

scaled
performance



Leveraging the best of "both"

IP and partitioning-agnostic fabric

Mature Foveros-S 2.5D packaging technology

Separated GPU tile for scaling to segments

Grouped I/O and platform-based IP

Up to
16
CPU cores

Up to
96GB
LPDDR5

Next-gen
IPU 7.5

Up to **180** TOPS
Across the total platform

Next-gen
NPU 5

New
Xe3 GPU

XeSS
Multi-Frame
Generation




Integrated
Thunderbolt™ 4

Panther Lake

Built for scale

Enhanced Intel Thread Director
& power management

Integrated Intel® Wi-Fi 7 (R2) &
Dual Intel® Bluetooth® Core 6

Up to
12
Xe-cores

E-core
Darkmont

P-core
Cougar Cove

8c
4Xe

16c
4Xe

16c
12Xe

Up to
12 lanes
PCIe gen 5



Intel®
Total
Storage
Encryption

New
LPCAMM
Support



Intel® Core™ Ultra Series 3
Processor Overview

 **X^e Media Engine²**

 **X^e3 Architecture**

 **Intel® Wi-Fi 7 R2⁶
Dual Bluetooth®
Core 6.0**

 **IPU 7.5**

 **Audio & Sensing**

NEW FEATURES

CPU:
Up to
16 Cores*

GPU:
Up to
12 X^e3 cores*

Up to LPDDR5X
9600^{13*}
Up to DDR5 7200¹³



Up to 20
PCIe Lanes*



Up to 50 TOPS

NPU

Intel® Partner
Security Engine



Intel® Total Storage
Encryption



Intel® Core™ Ultra Series 3 Processors SKUs

Processor Brand & Number	Intel® Core™ Ultra X9 Processors 388H	Intel® Core™ Ultra 9 Processors 386H	Intel® Core™ Ultra X7 Processors 368H	Intel® Core™ Ultra 7 Processors 366H	Intel® Core™ Ultra 7 Processors 365	Intel® Core™ Ultra X7 Processors 358H	Intel® Core™ Ultra 7 Processors 356H	Intel® Core™ Ultra 7 Processor 355
Total Cores & Threads	16	16	16	16	8	16	16	8
P-Core Max Core Turbo Freq (GHz) ¹⁰	5.1	4.9	5.0	4.8	4.8	4.8	4.7	4.7
Intel® Smart Cache LLC (MB)	18	18	18	18	12	18	18	12
Integrated NPU PTOPS ^{2,9}	50	50	50	50	49	50	50	49
Graphics Brand ¹	Intel® Arc™ B390 GPU	Intel® Graphics	Intel® Arc™ B390 GPU	Intel® Graphics	Intel® Graphics	Intel® Arc™ Pro B390 GPU	Intel® Graphics	Intel® Graphics
	Intel® Arc™ Pro B390 GPU		Intel® Arc™ Pro B390 GPU					
Total Xe Cores	12	4	12	4	4	12	4	4
Intel vPro ^{®12} Eligible	Yes					No		

Intel® Core™ Ultra Series 3 Processors SKUs

Processor Brand & Number	Intel® Core™ Ultra 5 Processors 338H	Intel® Core™ Ultra 5 Processors 336H	Intel® Core™ Ultra 5 Processors 335	Intel® Core™ Ultra 5 Processors 325	Intel® Core™ Ultra 5 Processors 332	Intel® Core™ Ultra 5 Processors 322
Total Cores & Threads	12	12	8	8	8	8
P-Core Max Core Turbo Freq (GHz) ¹⁰	4.7	4.6	4.6	4.5	4.4	4.4
Intel® Smart Cache LLC (MB)	18	18	12	12	12	12
Integrated NPU PTOPS ^{2,9}	47	47	47	47	46	46
Intel® Thermal Velocity Boost Frequency (GHz) ²	Intel® Arc™ B370 GPU	Intel® Graphics				
	Intel® Arc™ Pro B370 GPU					
Total Xe Cores	10	4	4	4	2	2
Intel vPro ^{®12} Eligible	Yes			No	Yes	No

BRAV x86 ROADMAP

BRAV-7520/7521



BRAV-7720/7721(WP)



BRAV-7823
<New product>

Intel® Coffee Lake-S

Intel® Comet lake-S

Intel® Tiger lake

Intel® Alder lake-S/
Raptor lake-S

Intel® Arrow Lake-H

Intel® Panther Lake-H



BRAV-7601



BRAV-7220



BRAV-7722



BRAV-7821



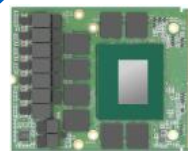
M.2 GPU



MXM GPU



PCIe GPU



Arc A750E



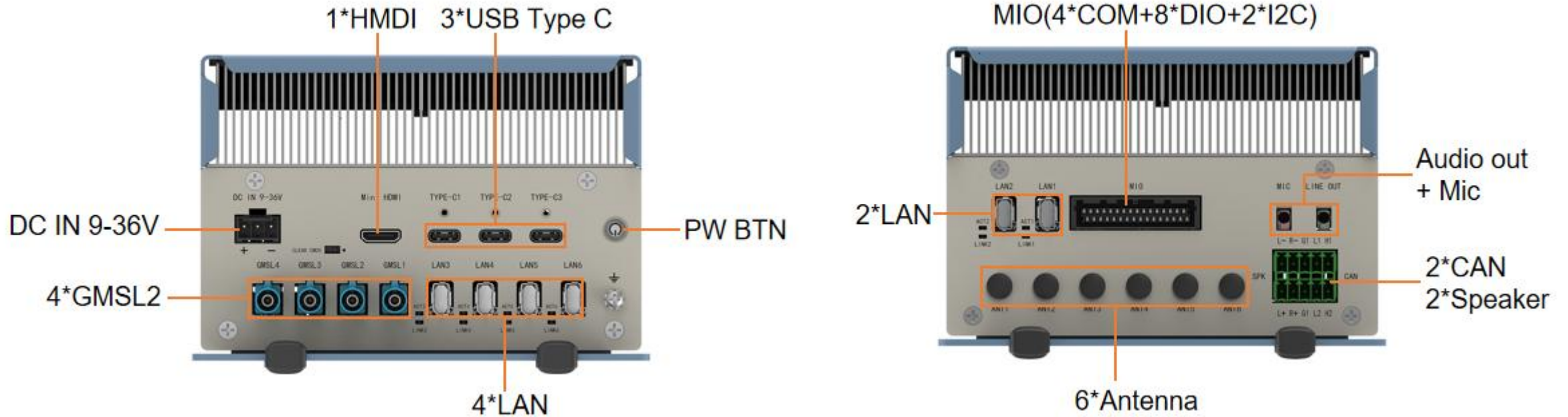
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■ BRAV-7823 Product Specifications

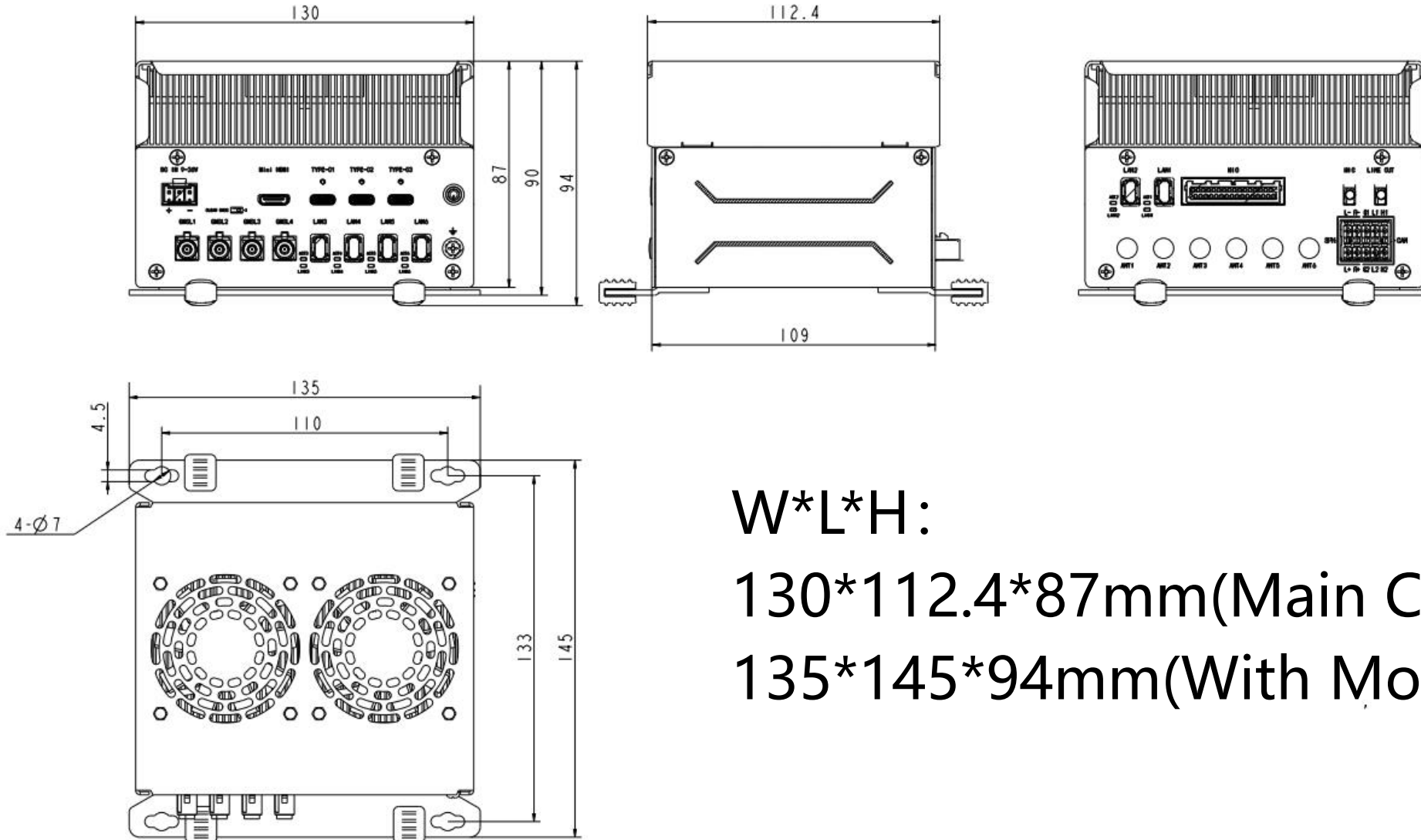


CPU	Intel® Core™ Ultra 5 238H and X7 358H
RAM	Dual-channel LPDDR5x-8533MHz Onboard memory, up to 64GB
LAN	6*I210AT G-LAN (IX61G2 w/LED)
Display	1*Mini HDMI
USB	3*USB Type C (5*USB3.2+5*USB2.0)
GMSL	4*GMSL2(Max96724 deserializer, Fakra automotive connectors)
COM	2*RS232/422/485+2*RS232
CAN	2*CAN2.0
DIO	8-channel isolated DIO (2.5KV isolation)
Audio	1*Line out+1*Mic(Realtek ALC897) 2-channel amplifier output
Expansion	1*M.2 2230 E-Key , 1*M.2 3042/3052 B-Key w/SIM
Storage	1* M.2 2280 M-Key (PCIeX4 Gen4) NVMe
Power	DC 9–36V wide-range input

■ BRAV-7823 I/O Interface Overview



■ BRAV-7823 Dimensions



W*L*H:

130*112.4*87mm(Main Chassis)

135*145*94mm(With Mounting Bracket)

■ BRAV-7823 Ordering Information



Ordering Info.

Model No.	CPU and Memory	Introduction
BRAV-7823-S001	Intel Ultra 5 338H, LPDDR5x 16GB	6*LAN, 4*GMSL2, 3*USB Typ C(5*USB3.2+5*USB2.0) 1*Mini HDMI, Audio out+Mic, 2*Chanle Amplifier speaker, 2*CAN2.0, 1*MIO(2*RS232/422/485 + 2*RS232, 8*Iso.DIO, 2*I2C), 1*M.2 M-key NVMe, 1*M.2 B-key, 1*M.2 E-key, DC-IN 9~36V.
BRAV-7823-S002	Intel Ultra X7 358H, LPDDR5x 32GB	
PA-120DC19 component	AC/DC power adapter, DC 19V/6.32A 120W + X Standard Power Cable	
Standard Package	1*2×5-pin Phoenix connector; 1*DC-IN connector with DF63-3S-3.96C assembly; 1* Mini HDMI to HDMI Type A cable; 2* USB Type C cables; 2*IX40G-A-10S assembly to RJ45 cables; 1*ZH05-16DP-HU(A) connector for MIO assembly	
IX40G Network Cable	IX40G-A-10S assembly to RJ45 network cable, 25cm in length	
USB Type C Cable	USB Type C male to dual USB3.0 Type A female cable, 25cm in length	
GMSL2 Interface Cable	Fakra to Fakra, female to female, 100cm in length	

BRAV-7823 Key Features

- ★ **Powered by Intel® Core™ Ultra 3 Series Processors High Energy Efficiency with Low Power Consumption**
- ★ **High-Speed Memory Performance**
- ★ **Automotive-Grade Reliability**
- ★ **Rich I/O for Diverse Application Scenarios**
- ★ **Optimized Design for Mobile Applications**

1

Intel Panther lake-H CPU

- *Open architecture with high flexibility, supporting Windows, Linux, and mainstream RTOS*
- *Supports OpenVINO™, Windows ML, DirectML, ONNX Runtime, WebGPU, WebNN, OpenCL, and Qwen*

2

Low-power SoC with built-in AI engine

- Ultra 5 238H: 150 TOPS | 45W | 3.3 TOPS/W*
- Ultra 7 358H: 180 TOPS | 60W | 3.0 TOPS/W*

3

LPDDR5x 8533MT/s Memory

- Onboard LPDDR5x memory (16GB–64GB) up to 8533 MT/s, with in-band ECC support*

4

Automotive-grade high-reliability design

- Onboard CPU & memory, automotive-grade design, isolated I/O, efficient cooling, -20°C to 50°C operation, with PCB conformal coating*

5

Flexible I/O and expansion for diverse applications

- 6*G-LAN, 3*USB Type C, 4*GMSL2, 4*COM, 2*CAN2.0, 8*bit DIO, Audio out+Mic, 1*M.2 E-key+1* M.2 B-key w/sim*

6

Optimized structural design for humanoid and embodied robotics

- Compact size (130 × 112.4 × 87 mm) with front/rear mounting brackets, high-density skived-fin heatsink and temperature-controlled fan*

■ BRAV-7823 Key Features

★ Intel® Core™ Ultra 3 Series Processors

- 1) Built on Intel® 18A process technology, delivering over 50% performance improvement compared to Lunar Lake and Arrow Lake, with lower power consumption and higher energy efficiency
- 2) Open and flexible architecture supporting Windows, Linux, and mainstream RTOS
- 3) Support OpenVINO™, WindowsML, DirectML, ONNX RT, WebGPU, WebNN, OpenCL, Qwen

Intel® Panther Lake-H SoC CPU

Up to **180** platform TOPS

CPU
NPU
GPU

AI engines

Microsoft

PyTorch ONNX TensorFlow

Hugging Face OpenVINO ONNX RUNTIME

TensorFlow Lite Keras W3C

Ecosystem engagement

Panther Lake
Built for Agentic AI

AI Engines in Panther Lake

Up to 180 platform TOPS	CPU	Up to 10 TOPS	VNNI & AVX	Light AI workloads
	NPU	Up to 50 TOPS	NPU5 MAC arrays	AI assistants
	GPU	Up to 120 TOPS	X ³ XMV engines	Gaming & creator AI

Panther Lake
16 core 12Xe

Compute tile

16 cores: 4 Hypercores, 8 Cores, 4 Hypercores

IPU75 Intel AI processor, NPUS, X² Media & display engines

9600NT/6 LPDDR5x, 8MB Memory side cache

Platform controller tile

12 GPU tile: 8x program, 4x engines

4x Thunderbolt™ 4

2x USB 3.2, 3x USB 2.0

Intel® Wi-Fi 7 (E2), Intel® Eluslooth™ Core 6.0

GPU tile

X^{e3} Architectures, 12 Xe cores, 12 Raytracing units

★ High Energy Efficiency with Low Power Consumption

CPU+iGPU+NPU+IPU

➤ Intel® Core™ Ultra 7 358H

- CPU: **8 TOPS** + Intel® Arc™ B390 iGPU: **122 TOPS** + NPU: **50 TOPS**
- **Total AI Performance: Up to 180 TOPS (INT8)**
- System Power: **60W** | Efficiency: **3.0 TOPS/W**

➤ Intel® Core™ Ultra 5 238H

- CPU: **5 TOPS** + Intel® Arc™ B370 iGPU: **98 TOPS** + NPU: **47 TOPS**
- **Total AI Performance: Up to 150 TOPS (INT8)**
- System Power: **45W** | Efficiency: **3.3 TOPS/W**

■ BRAV-7823 Key Features



Data source: JHC

■ BRAV-7823 Key Features

★ High-Speed Memory Performance

Onboard 16GB/32GB LPDDR5x memory up to 8533 MT/s with in-band ECC support



LPDDR5X 8533 MT/s
In-band ECC

32GB (8GB×4) High-Capacity LPDDR5X Memory
 Delivers smoother system operation, faster software startup, and improved processing efficiency.

32GB LPDDR5X
 Compared with **DDR5 6400MHz**,
 LPDDR5X **8533MT/s** delivers
 significantly enhanced performance.

AIDA64 Memory **Write Speed** **↑ 64.0%**

Memory **Copy Speed** **↑ 25%**

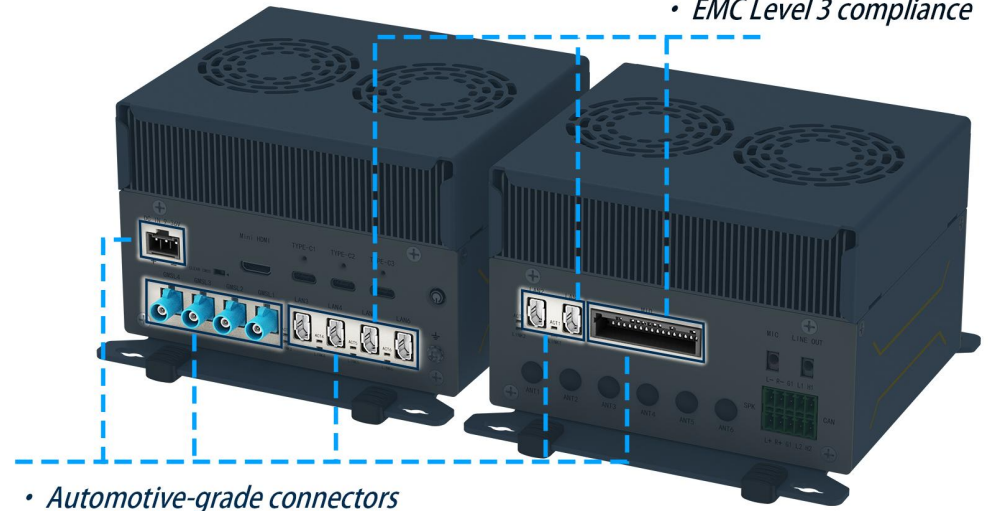
■ BRAV-7823 Key Features

★ Automotive-Grade Reliability

Designed and manufactured with automotive-grade standards and processes

1. Onboard CPU and memory, automotive-grade connectors, and certification
2. Isolated protection for Gigabit LAN, CAN, serial, and DIO interfaces
3. Professional and efficient thermal design, operating temperature: -20°C to 50°C
4. PCB conformal coating with IP51 protection rating

- Industrial-grade components
- Isolated communication interfaces
- EMC Level 3 compliance



- Automotive-grade connectors
- Automotive-grade certification



*Operating Temperature:
-20° C to 50° C*

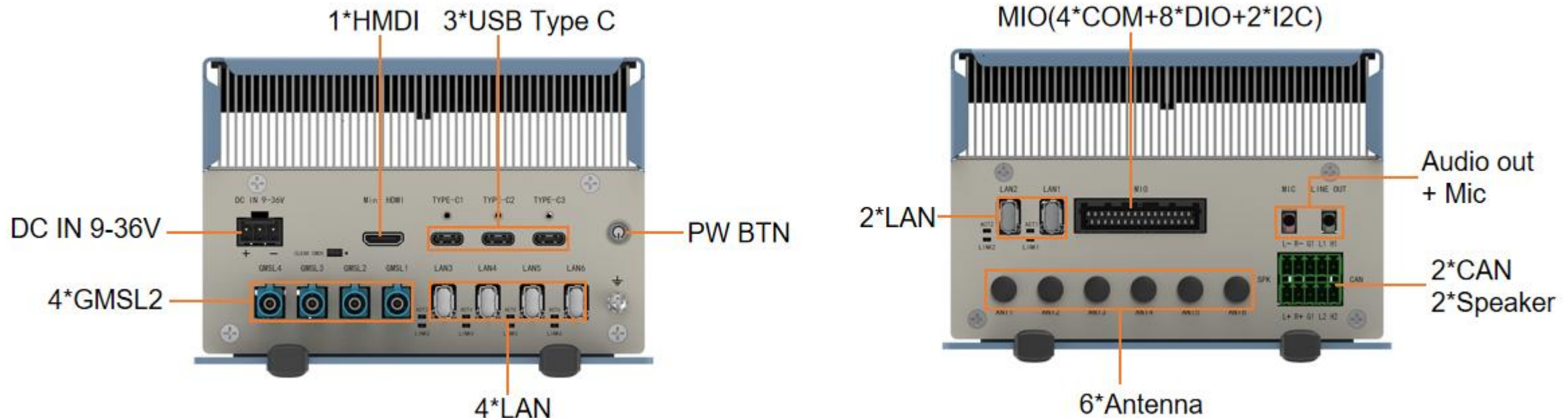
**Efficient
Cooling**



■ BRAV-7823 Key Features

- 1) 6*Intel I210 G-LAN, 4*GMSL2,2*CAN2.0, 3*USB Type C and 2* RS232/422/485+2*RS232 , 8*iso. DIO;
- 2) Mini HDMI 8K display, Audio out+Mic-in, 2-channel amplifier
- 3) 1*M.2 E-Key for WIFI7 and Bluetooth 6, 1*M.2 B-Key for 4G LTE / 5G NR connectivity;
- 4) Comprehensive I/O interfaces for connecting HD cameras, servo drives, and various control devices

★ Rich I/O and expansion for multiple applications



■ BRAV-7823 Key Features

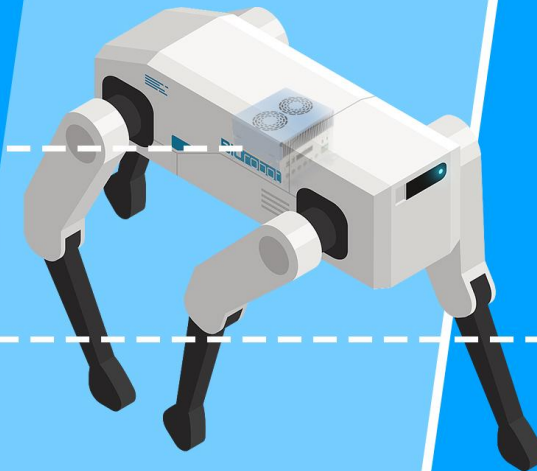


Optimized structural design for humanoid and embodied robotics

1. **Compact size (130 × 112.4 × 87 mm)** with front/rear mounting brackets, ideal for installation in compact robot enclosures or pole-mounted cabinets
2. **High-density skived-fin heatsink** with temperature-controlled silent fan, supporting dual airflow directions for flexible deployment in different thermal environments



- *Compact size*
- *Space-saving design*
- *Easy cabling and installation*



BRAV-7823 Target Markets



Robotics

- Humanoid Robots
- Embodied AI Robots



Autonomous Driving

- Autonomous Delivery Vehicles
- Autonomous Mining Trucks
- Autonomous Shuttle Vehicles
- Autonomous Buses



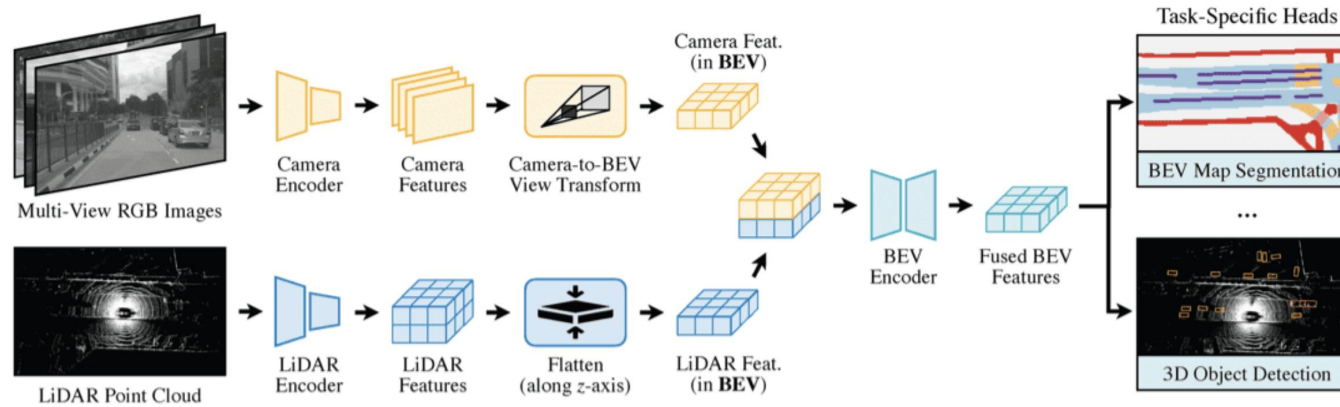
Intelligent Transportation

- Roadside Edge Computing (MEC)
- Highway Incident Detection

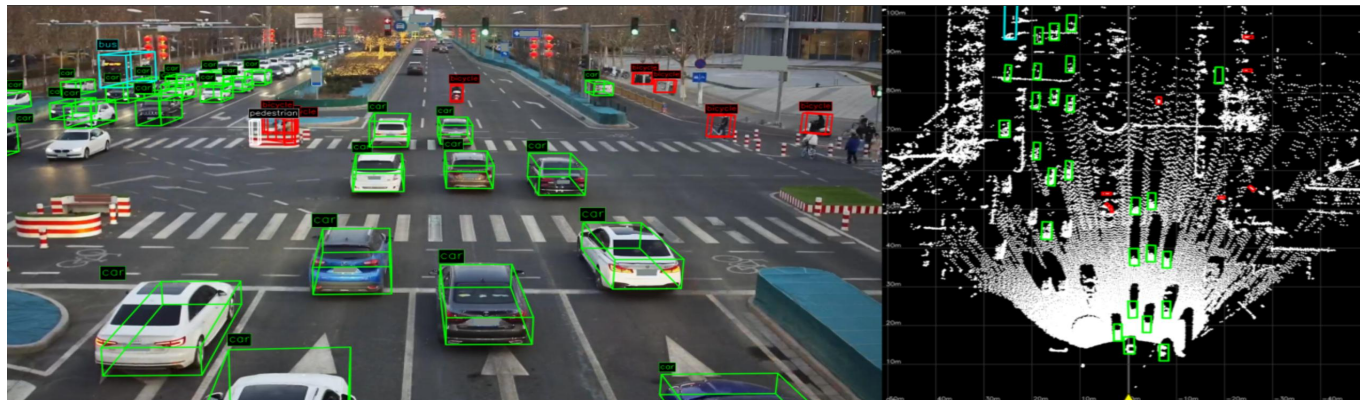


BEV-Fusion Sensor Fusion Solution

BEV-Fusion, as a representative mid-level sensor fusion approach, is increasingly adopted in complex perception scenarios such as autonomous vehicles, robotics, and road inspection.



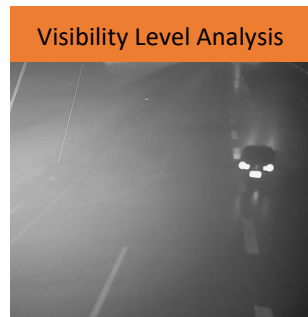
Due to its computational complexity, BEV-Fusion models require high AI computing performance to run efficiently.



With up to 180 TOPS AI performance, the Panther Lake platform can handle BEV-Fusion workloads with ease. On JHC systems, it delivers approximately 2× performance improvement compared to the previous generation.

Vision Foundation Model-Based Traffic Anomaly Detection System

Powered by the advanced computing performance of the **3rd Gen Intel® Core™ Ultra platform**, this solution enables **8B-scale vision models** to run directly on edge devices.



Based on the images above, please answer the following questions and present the results in a table according to the question numbers: Q1: Is there any animal

Q2: Is there any object on fire in the image?

Q3: Is there any traffic accident? If yes, briefly describe (≤30 words) and indicate how to handle it.

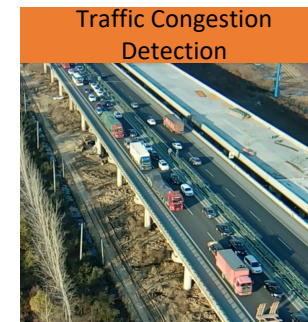
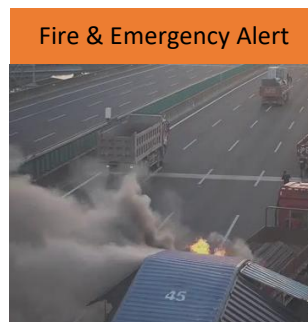
Q4: This is a highway scene. Please assess the visibility condition and classify it into levels: Over 200m = Excellent, 100–200m = Good, 50–100m = Moderate, 30–50m = Poor, below 30m = Very Poor.

Q5: Is there road construction in the image?

Q6: Is there any violation of traffic rules in the image?

Q7: Are there any objects on the road that may affect traffic?

No.	Question	Answer
1	Is there any animal in the image?	No
2	Is there any object on fire in the image?	No
3	Is there any traffic accident? If yes, briefly describe (≤30 words) and suggest handling.	Yes. Left: two vehicles collided at the toll gate; Right: vehicle pile-up. Handling: Turn on hazard lights, place warning signs, evacuate people to a safe area and wait.
4	Visibility condition and level	Good (clear visibility, >200m, no fog)
5	Is there road construction in the image?	No
6	Is there any violation of traffic rules in the image?	No
7	Are there any objects affecting traffic on the road?	Yes (debris scattered from accident vehicles blocking lanes)



BRAV-7823

New Product Progress



**7823 Small Batch Production:
Mid-May 2026**



Q1:

A1:

Q2:

A2:



Stay in Touch



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