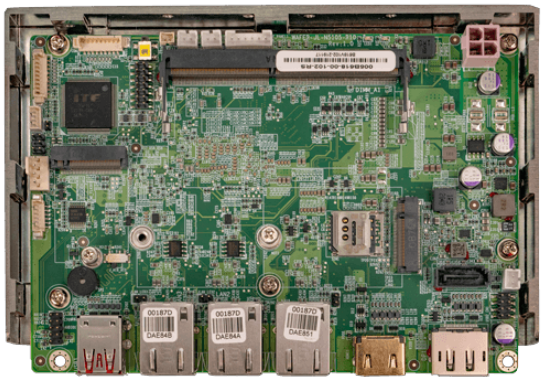
WAFER-JL

3.5” SBC with Intel® 10nm Jasper Lake Celeron® N5105 Processor with Dual Displays, DDR4, Triple Intel® 2.5 GbE, USB3.2, M.2, SATA, COM, SoC, RoHS



Features

1. support TDP 10W low power consumption Intel® Celeron® N5105 CPU

2. support Intel® I225V 2.5GbE Ethernet controller

3. Various I / O interfaces

Specifications

Form Factor	
Form Factor	3.5” SBC
System	
CPU	Intel®Celeron® N5105 on-board SoC (up to 2.90GHz, Quad-core, 4M Cache, TDP=10W)
Chipset	Intel®Celeron® N5105 on-board SoC (up to 2.90GHz, Quad-core, 4M Cache, TDP=10W)
Memory	One 260-pin 2933 MHz DDR4 SO-DIMM support up to 16 GB
Memory Max.	up to 16 GB
Cooling method / System Fan	1 x System fan connector (1x4 pin)
Physical Characteristics	
Dimensions (LxWxH) (mm)	146 X 102
Net Weight	250g
Storage	
Storage	1 x SATA
	1 x M.2(NGFF) : 1 x M.2 B Key (3042/2280) w/ SIM holder (with PCIe Gen3 x2/USB2.0)
I/O Interface	
Display Output	1 x HDMI™ : up to 4096 x 2160@30Hz
	1 x Display Port : up to 4096 x 2160@60Hz
Ethernet	3 x LAN :
	LAN1: Intel® I225V 2.5GbE controller
	LAN2: Intel® I225V 2.5GbE controller
	LAN3: Intel® I225V 2.5GbE controller\
Audio	1 x HD Audio : 1 x iAudio, support IEI AC-KIT-888S Audio Module (2 x 5 pin)
I/O Interface	2 x Internal RS-232 : 1x9 pin, P=1.25
	2 x Internal USB 2.0 : 2x4 pin, P=2.0
	1 x DIO : 1 x 12-bit digital I/O (2x7 pin)
	2 x External USB 3.2 Gen2x1 : 10Gb/s (Type-A)
Expansion	2 x M.2(NGFF) :
	1 x M.2 A key (2230, with PCIe Gen3 x1/USB 2.0)
	1 x M.2 B Key (3042/2280) w/ SIM holder (with PCIe Gen3 x2/USB2.0)
Power	
Power Consumption	12V@2.45A (Intel® Pentium® Silver N6000 3.30 GHz TDP 6W with one 16GB 2933 DDR4 memory)
Power Supply	+12V DC input power (AT/ATX mode)
Environment	
Operating Temperature	0°C ~ 60°C

Storage Temperature	-30°C ~ 70°C
Humidity	5% ~95%, non-condensing
Certifications	
Safety & EMC	CE/FCC compliant

Ordering Information

WAFER-JL-N5105-R10	3.5" SBC with Intel® 10nm Jasper Lake Celeron® N5105 Processor with Dual Displays,DDR4,Triple Intel® 2.5 GbE,USB3.2,M.2,SATA,COM,SoC,RoHS

Packing List

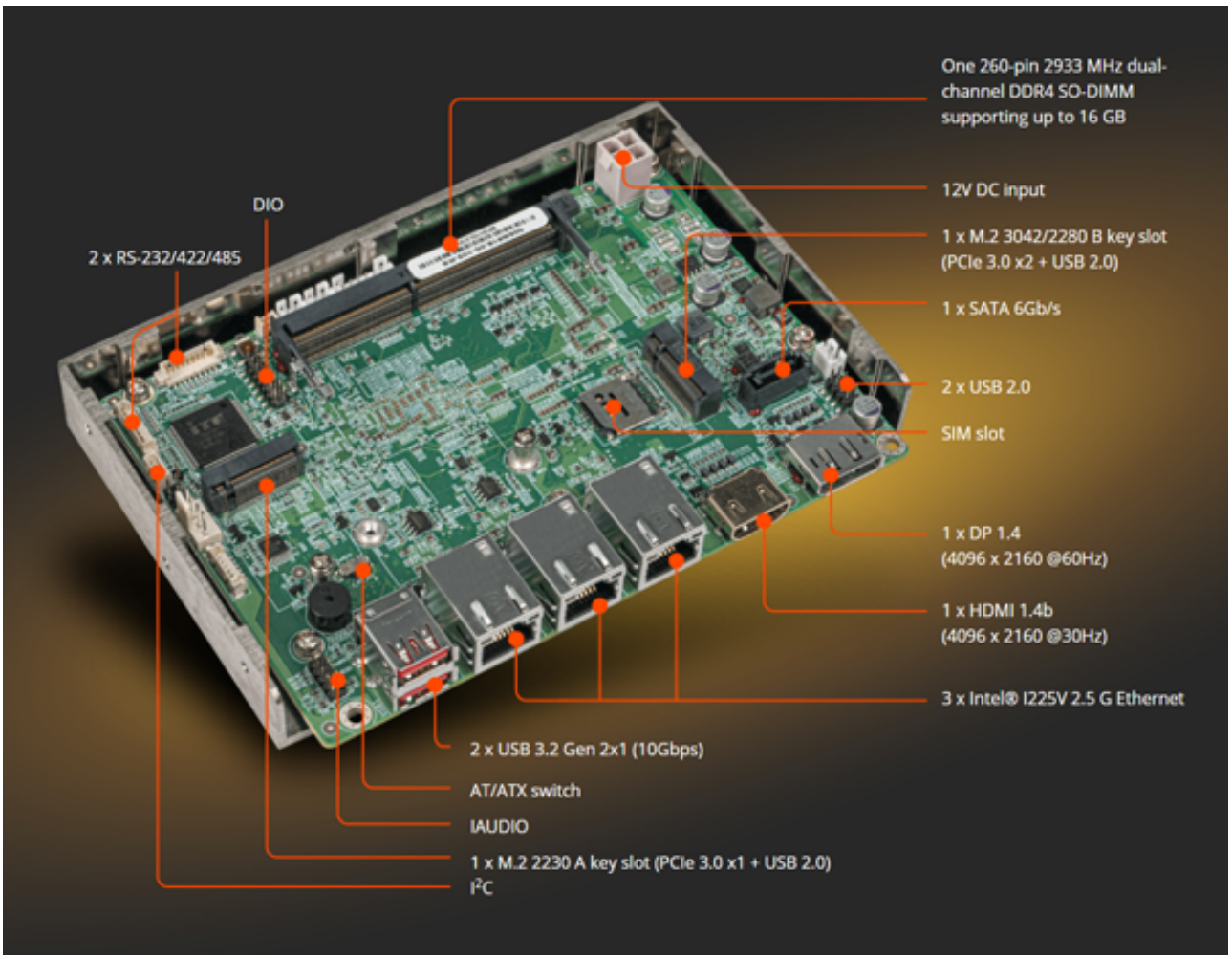
1 x WAFER-JL single board computer with Heatspreader	1 x QIG
1 x SATA with power cable kit	

Options

AC-KIT-888S-R10	Realtek ALC888S 7.1 Channel HD Audio peripheral board,RoHS
CB-USB02A-RS	Dual-port USB 2.0 cable, 210mm, P=2.0
32005-003500-200-RS	RS-232/422/485 cable, 2, 250mm, 26AWG, (A) D-SUB 9P, MALE+HEXAGONAL screw, (B) MOLEX 51021-0900 P=1.25
19XM0B619-0002001-000-RS	Cooler module, 157 mm x 100 mm x 20 mm, with pad and fan
19XM0B619-0002002-000-RS	Heatsink module, 157 mm x 100 mm x 20 mm, with pad

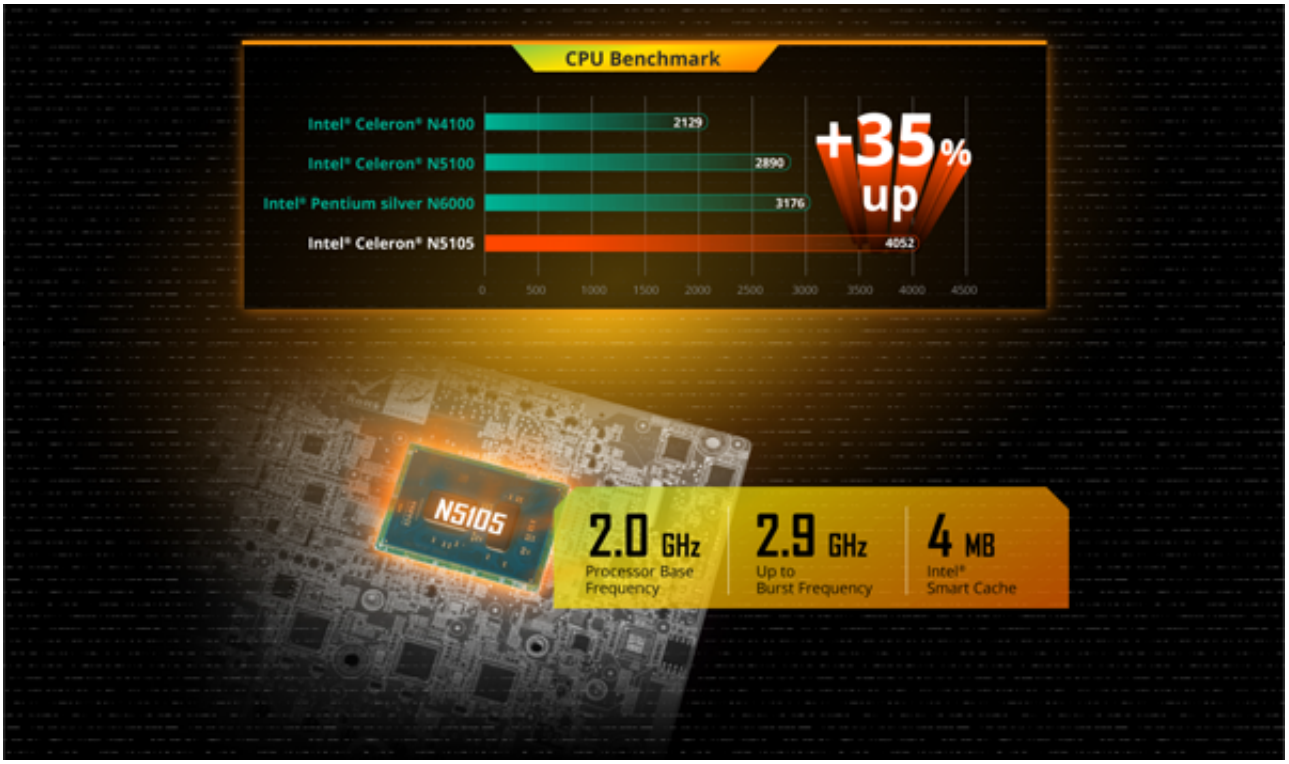
IEI WAFER-JL takes all the essential elements of the latest Intel® N5105 processor and combines them with smart manufacturing features and proven durability in the compact size 3.5" form factor.

It is ideal for space-constraints installation, notably AGVs, AMR (Autonomous Mobile Robot) and small cabinets in factories. It features complete I/O interfaces such as three 2.5 GbE LAN ports for motion control / IPcameras, an M.2 B-key with SIM slot for LTE cellular communication, and USB 3.2 Gen 1, DIO, serial ports for connecting sensors and communicating with other devices.



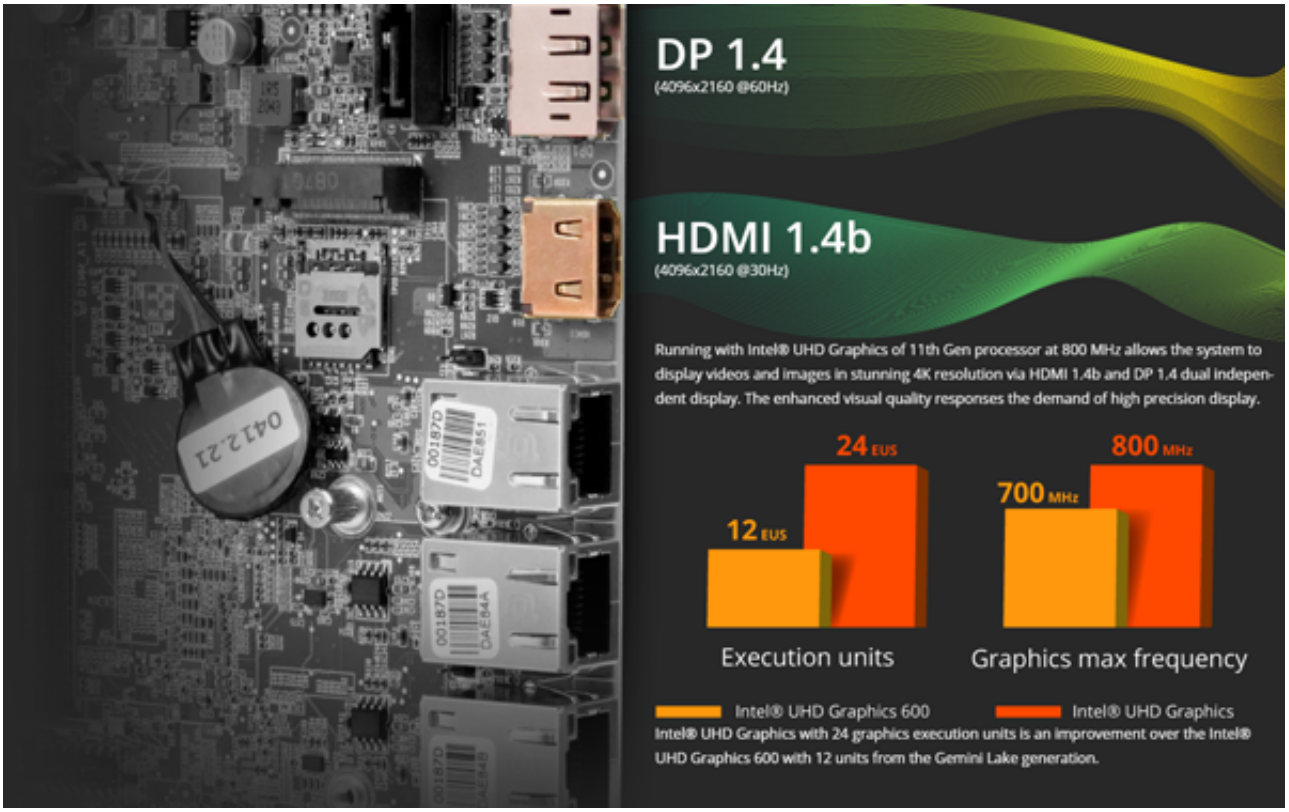
Quad-Core Intel® Celeron® Processor N5105

IEI WAFER-JL is a 3.5" embedded board equipped with an Intel® Celeron® N5105 quad-core Jasper Lake processor supporting 4 cores, 4 threads, turbo up-to 2.60 GHz with L3 cache, and offering significant IPC (Instruction Per Clock) gains plus 35% performance improvement over the predecessor Gemini Lake based on same base frequency.



Dual Independent Display

Delivers HDMI™+DP 4K Resolution for Real-time Monitoring

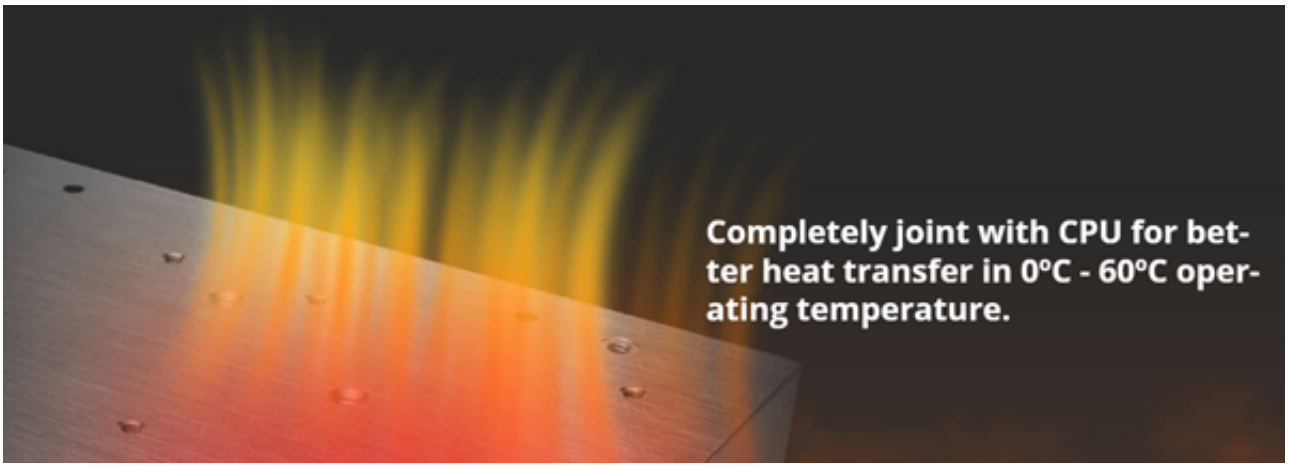


HEVC 10-bit Decoding/Encoding

Supports H.265/HEVC (High Efficiency Video Coding) 10-bit decoding/encoding to provide substantially improved video quality and higher bit depth video experience.

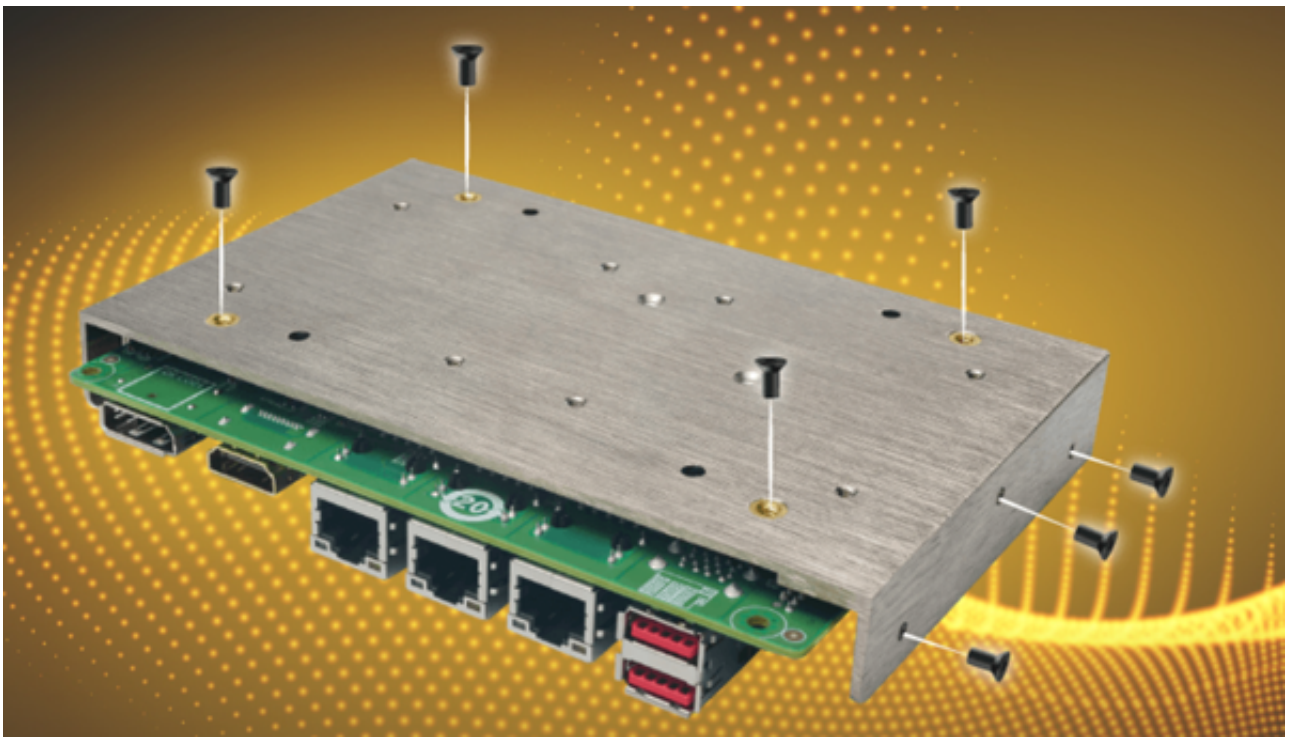
Well-design Thermal Solution

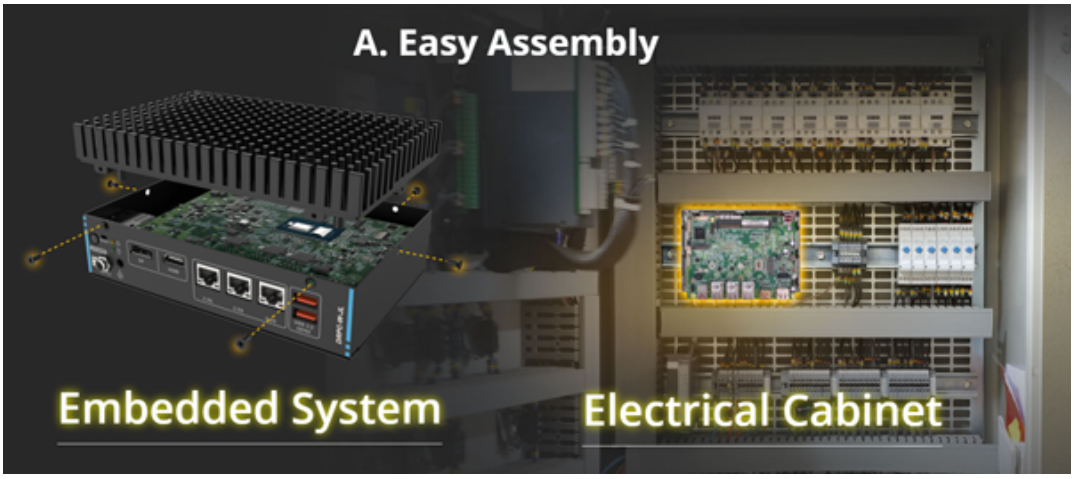
IEI has developed a highly efficient thermal solution for the 3.5" motherboard - IEI Heat Conduction Casing (IHCC). With its well-design structure, the IHCC can effectively improve heat transfer performance and cut time-to-market.

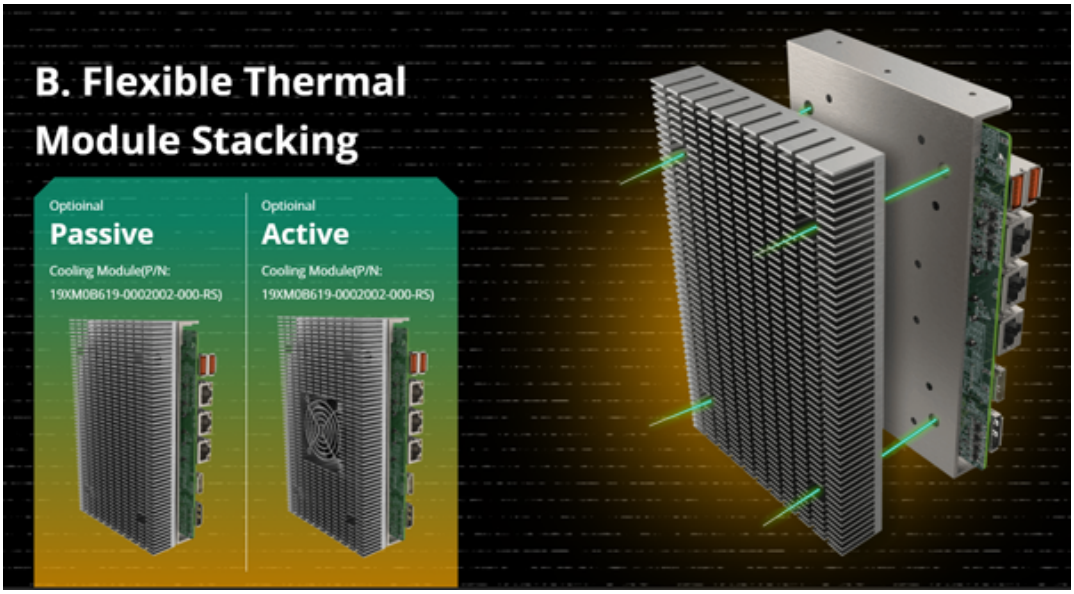


Diverse mounting options

It can be installed on a control cabinet's rear panel, door, or onto a DIN rail. And it is easy to install additional thermal module for operating under high ambient temperatures.

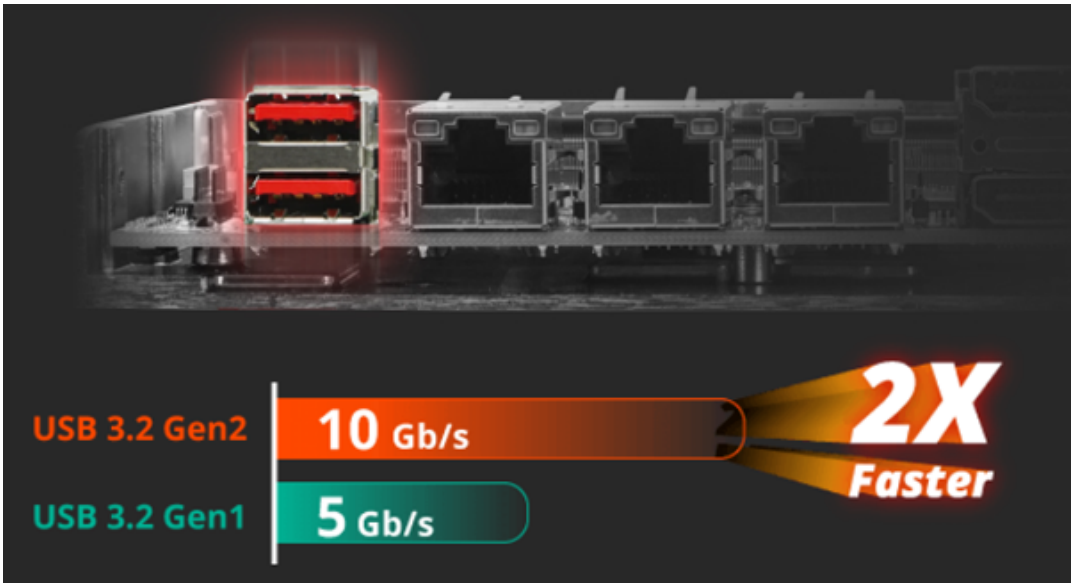


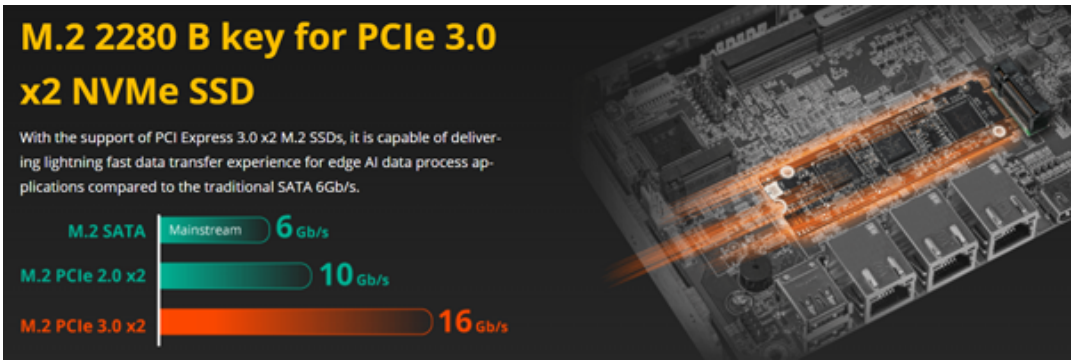




High Speed Transmission | Dual USB 3.2 Gen 2 (10Gb/s)

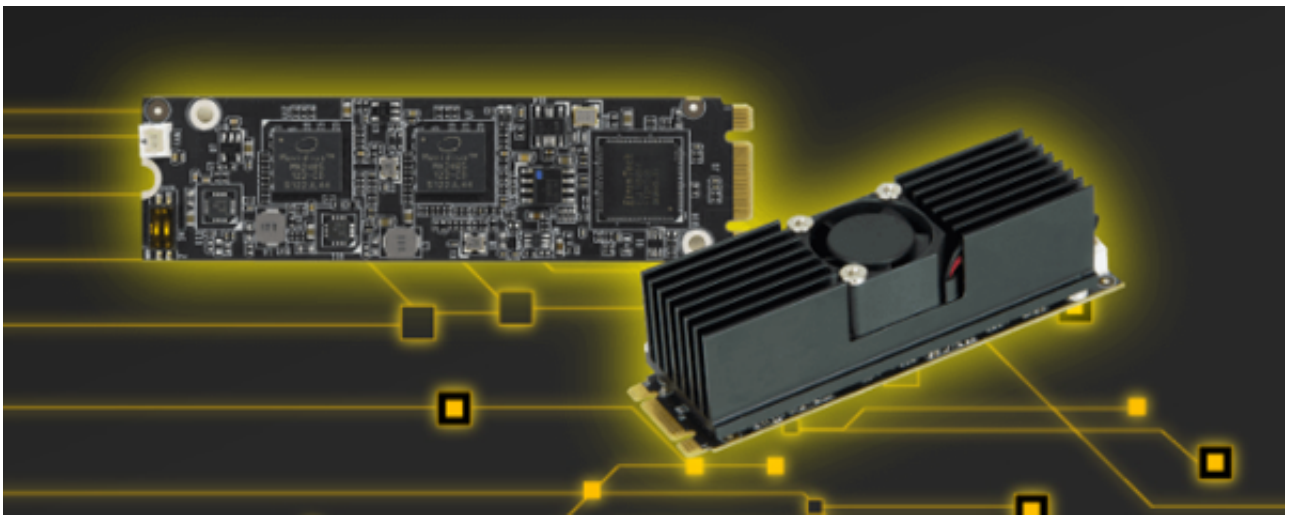
Two USB 3.2 Gen 2x1 (10 Gb/s) ports are integrated to support high density data transmission.



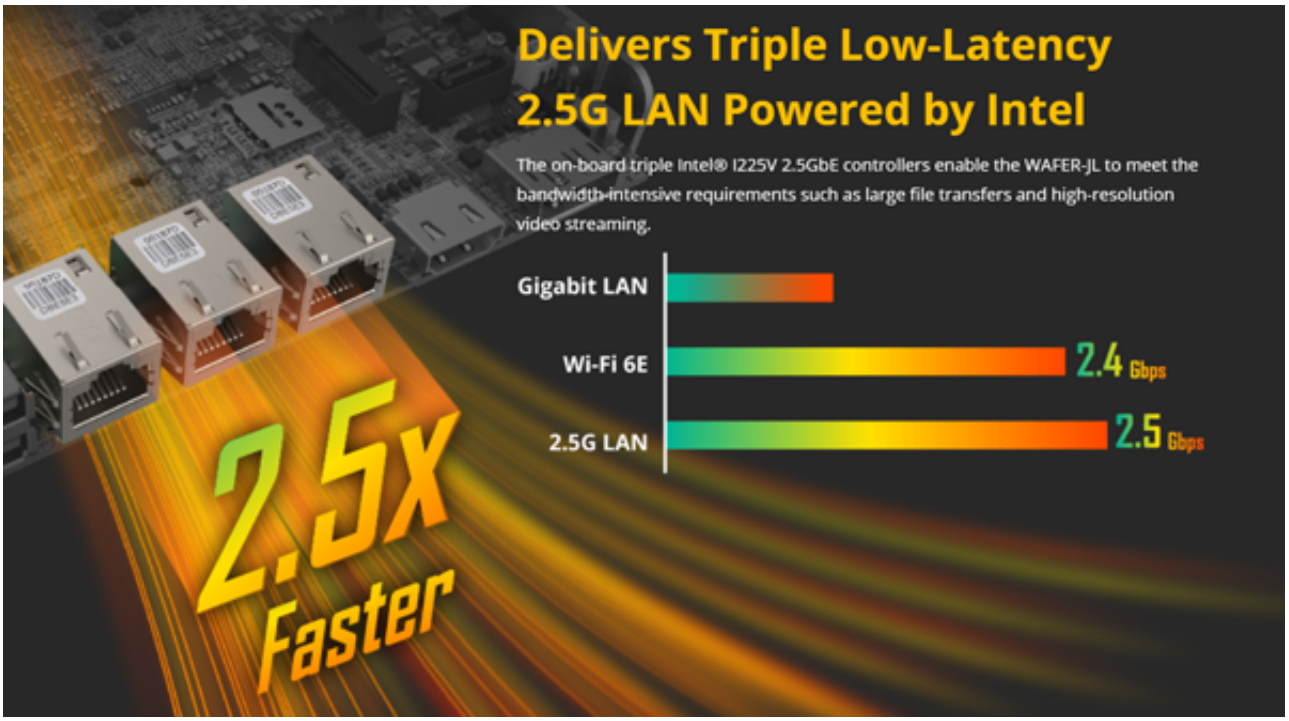


AI Accelerating

The Mustang-M2BM-MX2 card equipped with two Intel® Movidius™ Myriad™ X VPU, providing an flexible AI inference computing.

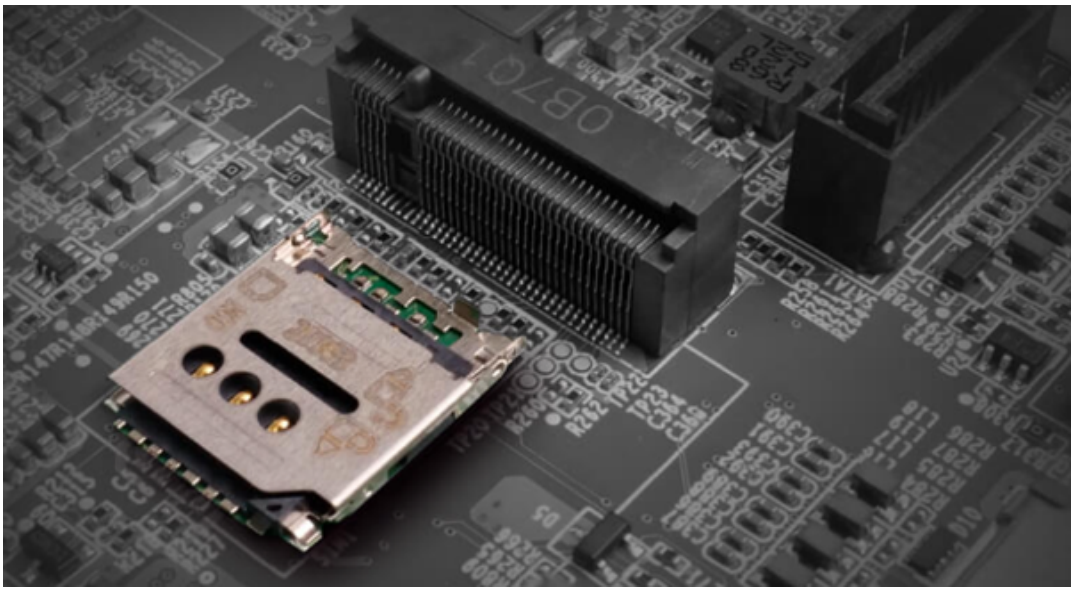


Networking



M.2 3042 B Key with SIM Slot for 4G LTE Cellular Communication

The M.2 3042 B key connector supporting PCI Express 3.0 x2 and USB 2.0 signals allows you to use a dedicated 4G LTE radio frequency to ensure secure and delay-free data transmission in smart manufacturing. *Any 5G requirements, please contact IEI for support.



Intelligent Robots

Robots are increasingly common in our daily lives. ISO defines the classification into industrial robot and service robot according to its intended application. Industrial robots are robots “for use in industrial automation applications” , while a service robot “performs useful tasks for humans or equipment excluding industrial automation applications” like AGVs and AMRs. Research indicates that with 2.1 million mobile robots predicted to have been shipped by the end of 2025 including 860,000 in that year alone, generating annual revenues of $18 billion [1].

And the global market for components used in industrial and collaborative robots was estimated to be worth $7bn in 2020, and forecast to be worth in excess of $9.3bn by 2025 [2].

To meet this trend, IEI is releasing the WAFER-JL for customers seeking robotics market opportunities.

[1] Mobile Robots On The March -Oct. 2021,ASH SHARMA,

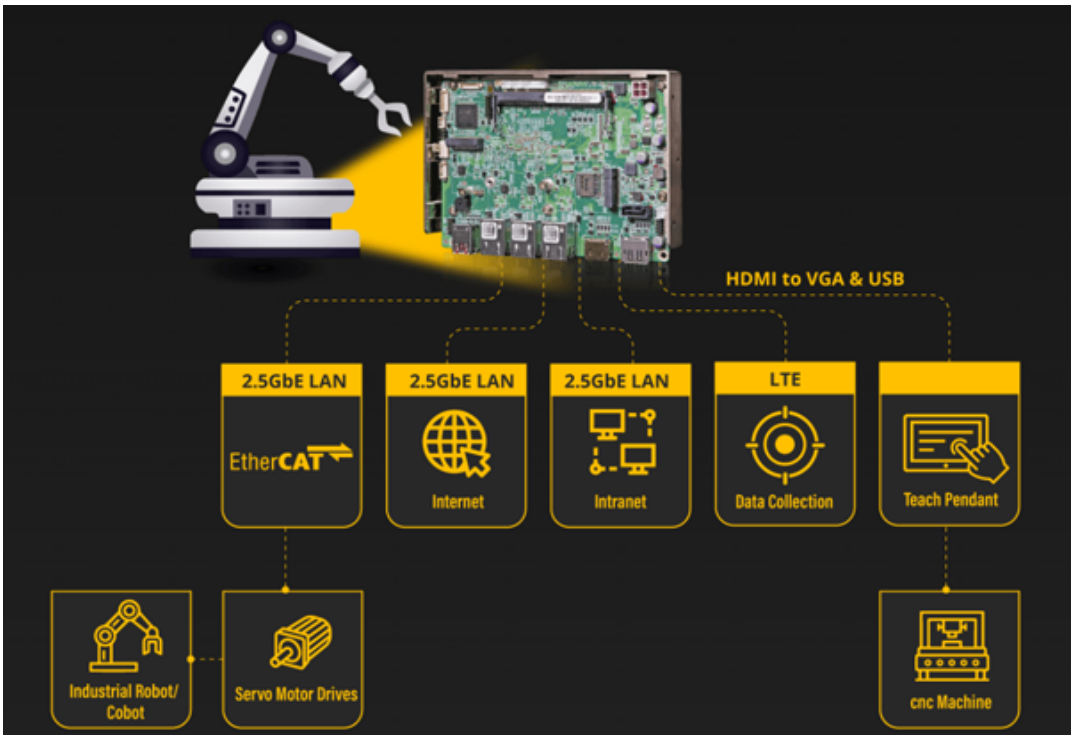
[2] CAGR of 6% Projected For Market For Components Used In Industrial Robots To 2025, TIM DAWSON,

AMR (Autonomous Mobile Robot)

Low-powered graphics performance: Powered by Intel® Celeron® N5105 quad-core processor, the WAFER-JL helps to deploy a power-saving and fanless graphics solution for object detection and machine vision.

Low power consumption: The WAFER-JL consumes only 24W; its low power consumption allows it to maximize battery life and keep the AMR productive.

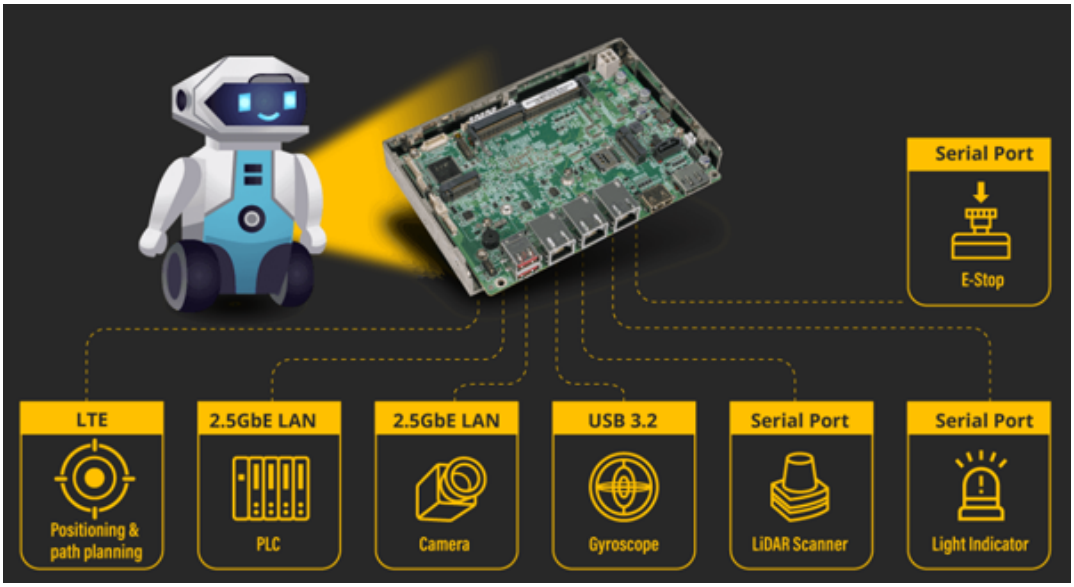
Wireless communication: With integrated M.2 & SIM card slots, the WAFER-JL can add wireless communication functions such as WiFi and LTE. It allows AMR to communicate with the close-by devices and command center.



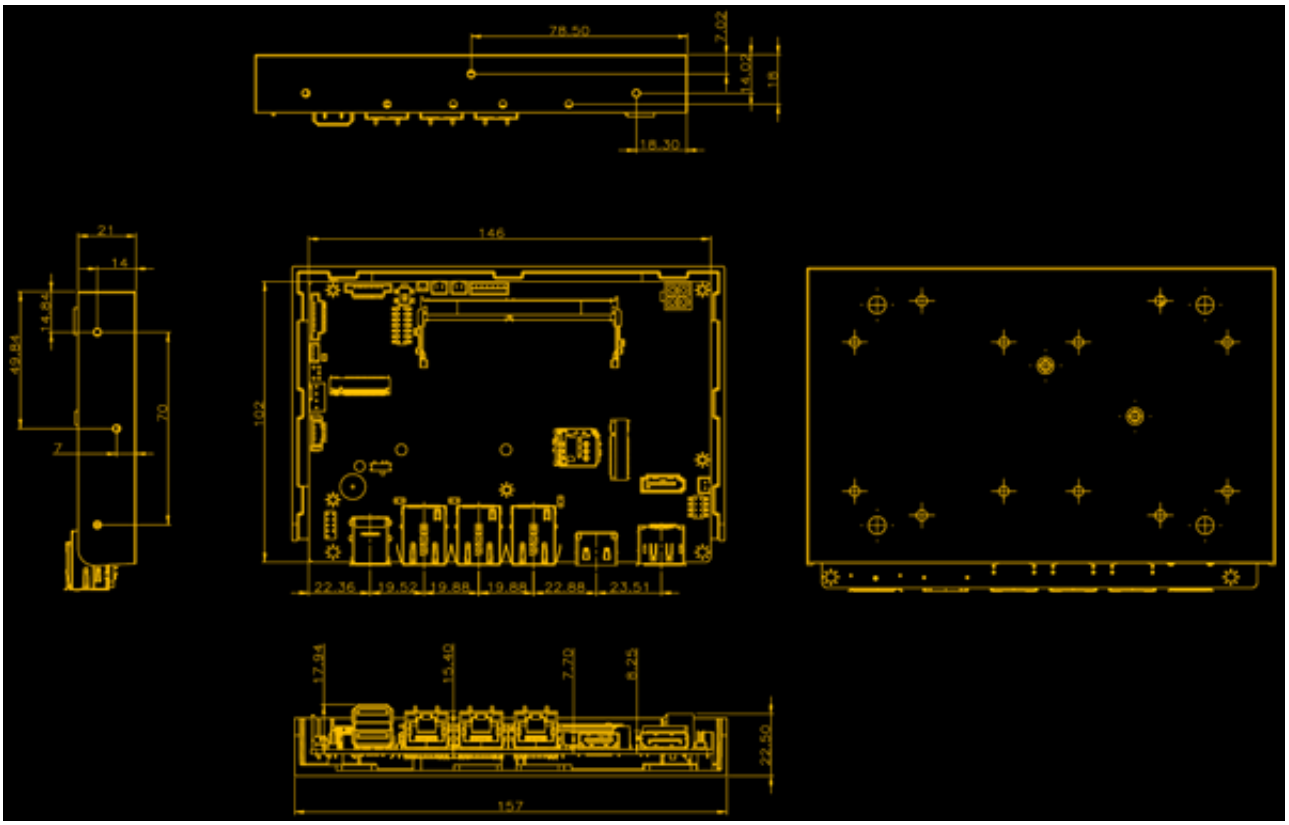
Robotic Arm

Triple 2.5GbE LAN ports: Packing three 2.5 Gigabit LAN ports into its small form factor allows extensive industrial connectivity. They can act as management ports, interconnecting to internet or intranet, enabling IP cameras connections, and neighboring robot arms synchronizing.

Well-designed thermal solution, ready for deployments: The 3.5" WAFER-JL is easy to be integrated into a tiny space, and its well-designed aluminum thermal case could help to reduce development cycle and speed up time to market.



Dimensions (Unit: mm)


78.50
7.02
14.02
18
18.30
21
14
14.84
49.84
70
7
146
102
22.36
19.52
19.88
19.88
22.88
23.51
17.94
13.40
7.70
8.25
22.50
157