

**JHCTECH 集和诚**

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**JHCTECH** IoT Computer  
Connecting the Dots

**AI Edge Computing System**

**AI**

集和诚科技于2002年4月在深圳成立，是一家集研发，生产，销售和服务于一体的智能物联系统供应商。自创立以来，依托丰富的行业经验和强大的科研背景，践行“场景赋能产品创新”的战略方针，持续专注于AI边缘计算及系统应用平台的研发与生产，实现“物联网 联万物”的智慧时代。其多元化的产品和服务包括AI边缘计算、边缘控制器、无风扇车载电脑、工业平板电脑、嵌入式箱体电脑、国产化无风扇箱体电脑、工业控制计算机、单板计算机等，以及专注于行业应用和人工智能增值服务的定制解决方案，赋能各行各业的数字化转型。产品已通过3C、CE、FCC、E-Mark、EN50155等安全法规和行业认证，广泛应用于智能交通、数字化工厂、智慧物流、智慧医疗、能源和环保等多个领域。

企业文化

战略目标:场景赋能产品创新

经营理念:专注行业、精于产品、优于服务

战略口号:物联网联万物

核心价值观:诚信、感恩、负责任

企业精神:以用户为中心,坚韧不拔,奉献,学习,创新,协同,包容,利他,向善

企业使命:致力于建设一个更智慧的地球和一个更智能化的明天;帮助改善每个人进步及长期发展,对世界的贡献

企业愿景:宁失利,勿失信。成为守诚信,重品质,敢担当,谋共赢的智能物联生态商业文明之典范

八大价值观

**价值:**借助技术创新为用户创造最大价值;

**奋斗:**坚持长期主义,努力奋斗,享受工作的快乐;

**精神:**任何方法论以核心价值观及企业精神衡量;

**学习:**学习力就是生命力,-切结果归根结底都是能力的体现;

**团队:**赋能个人成长,激活组织创造力,共建相互成就型组织;

**行动:**成功的标准是达成目标,效率和行动是关键;

**情感:**重情重义,不讲平均主义,反对机会主义;

**双赢:**链接共生,协同增效;成就他人,共利社会。

竹林效应:

一根竹子,如果它没有生在竹林里,而是孤立的,那就没有强大而发达的根系。但当竹子生长在竹林里时,它就像互相协调的生态系统。他们的根系交织在一起,一边不断向外延伸,一边为新的竹笋快速成长提供丰富的能量。我们以利他,向善的企业文化价值取向与用户共创价值。我们以用户为中心,依托经营的意志力及组织生长力形成竹林效应。将使命,愿景和价值观传递到产品及服务中,为用户创造价值。



About JHCTECH

*JHCTECH, established in 2002, is an intelligent IoT system supplier with extensive capabilities in research and development, production, sales, and service. With over two decades of experience in the industry and a strong scientific research background, JHCTECH is committed to a strategic approach of "Scenario Empowering Product Innovation". Continuously focusing on developing AI edge computing and system application platforms to usher in the intelligent era of "IoT computer connecting the dots."*

*JHCTECH offers a diverse range of products and services, including AI edge computing, edge controllers, fanless in-vehicle computers, industrial panel PCs, embedded box computers, domestically produced fanless box computers, industrial control computers, single-board computers, and customized solutions focused on industrial applications and AI value-added services, empowering digital transformation across all industries. These products have passed safety regulations and industry certifications such as 3C, CE, FCC, E-Mark, and EN50155, and are widely used in various fields such as intelligent transportation, digital factories, smart logistics, smart healthcare, energy, and environmental protection.*

Corporate Culture

**Brand Strategy:** Scenario Empowering Product Innovation

**Business Philosophy:** Focus on the industry, specialize in products, and excel in services

**Strategic Slogan:** IoT Computer, Connecting the Dots

**Core Values:** Integrity, gratitude, and responsibility

**Corporate Spirit:** Customer-centric, tenacious, dedicated, learning, innovative, collaborative, inclusive, altruistic, and virtuous.

**Corporate Mission:** Committed to building a smarter earth and a more intelligent tomorrow, helping to improve everyone's progress and long-term development, and contributing to the world.

**Corporate Vision:** Rather lose everything than lose integrity. Become a model of smart IoT ecological and commercial civilization that keeps integrity, emphasizes quality, is courageous and seeks win-win outcomes.

Eight Corporate Values

**1.Value:** Creating maximum value for users through technological innovation.

**2.Strive:** Upholding long-termism, striving hard, and enjoying the joy of work.

**3.Spirit:** All methodologies are measured by core values and corporate spirit.

**4.Learning:** Learning is vital as all achievements ultimately reflect one's capabilities.

**5.Team:** Empowering individual growth, activating organizational creativity, and co-building a mutually fulfilling organization.

**6.Action:** The standard of success is goal achievement; efficiency and action are the keys.

**7.Affection:** Valuing emotions and principles, opposing egalitarianism and opportunism.

**8.Win-Win:** Linking symbiosis, synergizing for increased efficiency; achieving success for others, benefiting society as a whole.

Bamboo Forest Effect:

*A bamboo, if it does not grow in a bamboo forest but is isolated, does not have a strong and developed root system. But when bamboo grows in a bamboo forest, it acts like a coordinated ecosystem. Their root systems are intertwined and continue to extend outward while providing abundant energy for the rapid growth of new bamboo shoots. We create value with users based on the corporate cultural value orientation of altruism and kindness. We are user-centered and rely on our business willpower and organizational growth to form the Bamboo Forest Effect. Transmit mission, vision and values into products and services to create value for users.*



**BRAV**

Edge Computing System  
边缘计算系统——布拉沃系列

A

**CNTI**

Fanless Computer  
国产化无风扇箱体电脑——信泰系列

**KGEC**

Edge Controller  
边缘控制器——考工系列(KAGO)

B

**KMDA**

Embedded Box Computer  
嵌入式箱体电脑——卡曼达系列

C

**ECC**

Embedded Box PC  
能源控制器系列

**ALAD**

Industrial Panel PC  
工业平板电脑——阿拉丁系列

D

**WPPC**

Industrial Waterproof Panel PC  
防水工业平板电脑

**SIGM**

Fanless In-Vehicle Computer  
嵌入式车载电脑——西格玛系列

E

**ICS**

Intelligent control system  
交通监控服务器

**SBC**

Embedded Single Board Computer  
嵌入式单板电脑系列

F

**NODE**

NODE Core Module  
NODE 核心模块

**PADR**

IPC-PADR Series  
工业控制计算机——潘多拉系列

**JHCTECH** IoT Computer  
Connecting the Dots

**BRAV**  
Edge Computing system





**BRAV-7131** (NVIDIA Jetson)



**BRAV-7121** (NVIDIA Jetson)



**BRAV-7201**



**BRAV-7220**



**BRAV-7302**



**BRAV-7501**



**BRAV-7520**



**BRAV-7521**

## System

	BRAV-7131	BRAV-7121	BRAV-7201	BRAV-7220	BRAV-7302	BRAV-7501	BRAV-7520	BRAV-7521
<b>CPU</b>	8* Cores Arm® Cortex®-A78AE v8.2 64 bit CPU 12* Cores Arm® Cortex®-A78AE v8.2 64 bit CPU	6* Cores Arm® Cortex®-A78AE v8.2 64 bit CPU 8* Cores Arm® Cortex®-A78AE v8.2 64 bit CPU	6th gen Intel Skylake-U Celeron 3855U; Core-U: I3-6100U; I5-6200U; I7-6500U; 7th gen Intel Kabylake-U Celeron 3865U; Core-U: I3-7100U; I5-7200U; I7-7500U	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W/28W	Intel® Skylake-S Intel® Kabylake-S Celeron/Pentium/Core I3/I5/I7 CPU, LGA 1151 socket, TDP35W/54W/65W/91W with active cooling fan	Intel® Xeon® E or 9th/8th-Gen Core™ i7/i5/i3 LGA1151 processor, up to 8 cores 16 threads	Intel® Xeon® E or 9th/8th-Gen Core™ i7/i5/i3 LGA1151 processor, up to 8 cores 16 threads	Intel® Xeon® E or 9th/8th-Gen Core™ i7/i5/i3 LGA1151 processor, up to 8 cores 16 threads
<b>RAM</b>	S001: 32GB; S002: 64GB 256 bit LPDDR5	S001: 8GB; S002: 16GB; 128 bit LPDDR5	2* DDR4 2133MHz, 32GB max.	2* DDR4 3200MHz, 64GB max.	2* DDR4 2133/2400MHz, 32GB max.	4* DDR4 2666/2400MHz DIMM, 128GB max.	4* DDR4 2666/2400MHz SODIMM, 128GB max.	4* DDR4 2666/2400MHz SODIMM, 128GB max.
<b>Graphics</b>	S001: NVIDIA Ampere GPU, 1792 Cuda cores+ 56 Tensor Cores; S002: NVIDIA Ampere GPU, 2048 Cuda cores+ 64 Tensor Cores	S001: NVIDIA Ampere GPU, 1024 Cuda cores+ 32 Tensor Cores; 765MHz S002: NVIDIA Ampere GPU, 1024 Cuda cores+ 32 Tensor Cores; 918MHz	CPU integrated Intel 9th gen HD Graphics, HEVC/H265 HW HD codec, HDMI: 3940*2160@30Hz, DP: 4096*2160@60Hz	Intel UHD / Iris®Xe Graphics, Supports Intel DeepLearning boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI2.0:4096x2304@60Hz, DP 1.4: 7680x4320@60Hz	Intel Gen. 9 HD Graphics, HEVC/H265 HW, DP/HDMI/VGA (DP&HDMI 4K); 1* MXM3.1(NVIDIA GTX/AMD RX GPU up to 120W, 3*DP & 1*HDMI 4K)	Intel UHD Graphics, DirectX11.1, OpenGL 5.0 and OpenCL 2.1, DP: 4096*2304@60Hz, DP:4096*2304@60Hz, HDMI: 3840*2160@30Hz, 3 independent displays	Intel UHD Graphics, DirectX11.1, OpenGL 5.0 and OpenCL 2.1, DP: 4096*2304@60Hz, DP:4096*2304@60Hz, VGA: 1900*1200@60Hz, 3 independent displays	Intel UHD Graphics, DirectX11.1, OpenGL 5.0 and OpenCL 2.1, DP: 4096*2304@60Hz, DP:4096*2304@60Hz, VGA: 1900*1200@60Hz, 3 independent displays

## I/O Interfaces

<b>LAN</b>	5* Intel I210AT, 10-1000M, NTP	4* Intel I210AT, 10-1000M, NTP	4* Intel I211AT/I210AT, 10-1000M, 1* Intel I219LM, 10-1000M, iVpro	3* Intel I226V, 10M-2.5G, iAMT 13.0/iVpro	2* / 6* Intel I210AT, 10-1000M; 1* Intel I219LM, 10-1000M, iVpro	2* Intel I211AT/I210AT, 10-1000M; 1* Intel I219LM, 10-1000M, iVpro	2* Intel I211AT/I210AT, 10-1000M; 1* Intel I219LM, 10-1000M, iVpro	2* Intel I211AT/I210AT, 10-1000M; 1* Intel I219LM, 10-1000M, iVpro
<b>USB</b>	2* USB3.2 Gen2(10Gbps); 2* USB2.0	2* USB3.2 Gen2(10Gbps); 2* USB2.0	4* USB3.0 + 2* USB2.0	2* USB3.2 + 2* USB2.0	4*/6* USB3.0 + 2* USB2.0	4* USB3.1 + 6* USB2.0	6* USB3.1 + 2* USB2.0	6* USB3.1 + 2* USB2.0
<b>Display</b>	1* HDMI	1* HDMI	1* DP + 1* HDMI	1* DP + 1* HDMI	1* DP & HDMI; GPU: 3* DP + 1* HDMI	2* DP + 1* HDMI	2* DP + 1* VGA	2* DP + 1* VGA
<b>Audio</b>	1* Line out, Realtek ALC5640	1* Line out, Realtek ALC5640	1* Line out + 1* MIC	/	1* Line out + 1* MIC	1* Line out + 1* MIC	1* Line out + 1* MIC	1* Line out + 1* MIC
<b>Serial Port</b>	2* RS232/422; 2* RS232	1* RS232/422/485; 1* RS232; 2* Iso. CAN	2* RS232/422/485 + 4* RS232	2* RS232/422/485	2* RS232/422/485 + 2* RS232	2* RS232/422/485	2* RS232/422/485 + 2* RS232	2* RS232/422/485 + 2* RS232
<b>DIO</b>	8bit DIO, TTL, 2.5KV optical isolation input/output	8bit DIO, TTL, 2.5KV optical isolation input/output	8-bit TTL programmable input/output; 8-bit 2.5KV input opto-isolator(H:5-24V, L:0-1.5V), input/output 8-bit 2.5KV output opto-isolator(100mA)	8bit DIO, TTL, 2.5KV optical isolation	16-bit TTL programmable input/output;	8-bit TTL programmable input/output;	16-bit Iso DIO, 8-bit 2.5KV input opto-isolator(H:5-24V, L:0-1.5V), 8-bit 2.5KV output opto-isolator (200mA)	16-bit Iso DIO, 8-bit 2.5KV input opto-isolator(H:5-24V, L:0-1.5V), 8-bit 2.5KV output opto-isolator(200mA)

## Storage

<b>Storage</b>	64GB eMMC, optional 1*2.5" SATA3; 1* M.2 2280 M-Key(PCIeX4), NVMe; 1* Micro SD	1* M.2 2280 M-Key(PCIeX4), NVMe; 1* Micro SD	1* 2.5" SATA3+ 1* mSATA	1* 2.5" SATA3+ 1* mSATA; 2* M.2 M-Key 2280(PCIeX2), NVMe	2* 2.5" SATA3 + 1* mSATA	2* 3.5" SATA3+1* M.2(S001); 4* 2.5" SATA3+1* M.2(S002)	2* 2.5" SATA3; 1* M.2 NVMe	4* 2.5" SATA3; 1* M.2, NVMe
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## Expansion

<b>Expansion Port</b>	1* Mini PCIe(PCIeX2+USB+SIM), 4G LTE/LAN/CAN; 1* M.2 3052 B-Key(PCIeX2+USB+SIM), 4G LTE/5G; 1* M.2 2280 M-Key(PCIeX4), NVMe/AI module 1* M.2 2230 E-Key(PCIeX1+USB), WiFi6/BT5.0	1* Mini PCIe(PCIeX2+USB+SIM), 4G LTE/LAN/CAN; 1* M.2 3052 B-Key(PCIeX2+USB+SIM), 4G LTE/5G; 1* M.2 2280 M-Key(PCIeX4), NVMe/AI module	1* M.2 B-Key 3042(PCIe X1/USB+SIM), 4G LTE 1* M.2 B-Key 3052(PCIe X1/USB+SIM), 4G LTE/5G 1* M.2 M-Key 2280(PCIe4.0X2), NVMe/AI module 1* M.2 M-Key 2280(PCIe3.0X2), NVMe/AI module	1* Mini PCIe with SIM slot; 1* M.2 with SIM slot, 1* full size mSATA; 1* half size Mini PCIe, 1* JHC-Express-02 EIO Express bus	1* Mini PCIe(PCIeX1/USB+SIM); 2* PCIe3.0X16(1* PCIe X16 or 2* PCIe X8) up to NVIDIA 3080Ti FE; 2* PCIe3.0X8(X4)	1* Mini PCIe(PCIeX1/USB+SIM, BIOS to mSATA); 1* M.2 E-Key(+SIM), WiFi6/BT5.0; 1* M.2 B-Key(+SIM), 5G NR; 1* M.2 M-Key(PCIe3.0X4), NVMe; 1* PCIe3.0X16(X16), GPU<350W<300mm 1* PCIe3.0X16(X4), AI card<75W<300mm	1* Mini PCIe(PCIeX1/USB+SIM, BIOS to mSATA); 1* M.2 E-Key(+SIM), WiFi6/BT5.0; 1* M.2 B-Key(+SIM), 5G NR; 1* M.2 M-Key(PCIe3.0X4), NVMe; 2* PCIe3.0X16(X8), GPU<350W<300mm 2* PCIe3.0X16(X4), 2* AI card
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## Power Supply

<b>Pwr Consump</b>	DC9-36V; DC out 12V 3A(Max); 50.4W (Jetson AGX Orin 32GB)	DC9-36V; DC out 12V 3A(Max); TBD	DC9-30V; 24W (I3-6100 CPU 4G DDR4)	DC9-36V; 38.4W (I5-1135G7 CPU/16G DDR4/256G SSD)	DC6-48V; 144W (35W CPU+78W GPU)	24-pin ATX/8-pin ATX 12V, 600W power supply	DC 12V 5-pin Term; Consumption: 12V/27A (I7-8700 CPU 32GB DDR4 single 2080Ti GPU)	DC 12V 5-pin Term. Consumption: 12V/47A (I7-8700 CPU 32GB DDR4 dual 2080Ti GPU)
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## Mechanical

<b>Structure</b>	Fan cooling design, SGCC chassis	SGCC chassis	Aluminum Case, SGCC chassis	Aluminum Case, SGCC chassis	Aluminum Case, SGCC chassis	Aluminum-magnesium alloy, SGCC chassis	Aluminum-magnesium alloy, SGCC chassis	Aluminum-magnesium alloy, SGCC chassis
<b>Dimension (W*H*D)</b>	256.4*168*86.5mm	190*145*68mm	225*144.3*87.5mm	326.4*183*96.6mm	255*222*84.1mm	150*309*375mm	230*350*160mm	230*350*210mm
<b>Net Weight</b>	3.25KG	TBD	2.2kg	4.67KG	4.62kg	8.14kg	7.5kg	8.3kg

## Environmental

<b>Operating Temp</b>	-20°C~60°C, with air flow	-20°C~60°C, with air flow	-25°C~60°C, Fanless, SSD, with air flow, -10°C~50°C, Fanless, HDD, with air flow	-20°C~70°C, with air flow(CPU, non VPU); -20°C~60°C, with air flow(CPU+2*VPU)	-25°C~50°C - 65W CPU+78W GPU -25°C~40°C - 91W CPU+120W GPU	-25~50°C, SSD, with air flow	-25~60°C, SSD, with air flow	-25~60°C, SSD, with air flow
<b>Storage Temp</b>	-40°C~85°C							
<b>Storage Humidity</b>	10~90%@40°C, Non-condensing	10~90%@40°C, Non-condensing	10~90%@40°C, No-condensation	10~95%@40°C, No-condensation	10~90%@40°C, No-condensation	10~90%@40°C, No-condensation	10~90%@40°C, No-condensation	10~90%@40°C, No-condensation
<b>Vibration</b>	5 grms/5~500Hz/random/during operation(SSD); 1 grms/5~500Hz/during operation(HDD)							
<b>Shock</b>	50g peak acceleration(duration;11ms)(SSD); 20g peak acceleration(duration;11ms)(HDD)							
<b>Certification/EMC</b>	CE/FCC Class A							

<b>OS</b>	Linux Ubuntu 18.04/20.04 with JetPack	Linux Ubuntu 18.04/20.04 with JetPack	Linux Fedora Ubuntu	Windows 10 64 bit, Windows 11 64 bit, SUSE, Linux, Wind River	Windows 7, Windows 10, Linux Fedora Ubuntu	Windows 10/Windows Server 2016 (Intel® Xeon® E) Ubuntu/SuSe/Redhat Enterprise 1,2 (Kernel 4.14) (CFL-R) Wind River VxWorks 7 (CFL-R)	Windows 10/Windows Server 2016 (Intel® Xeon® E) Ubuntu/SuSe/Redhat Enterprise 1,2 (Kernel 4.14) (CFL-R) Wind River VxWorks 7 (CFL-R)	Windows 10/Windows Server 2016 (Intel® Xeon® E) Ubuntu/SuSe/Redhat Enterprise 1,2 (Kernel 4.14) (CFL-R) Wind River VxWorks 7 (CFL-R)
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**BRAV-7601-S**



**BRAV-7601-T**



**BRAV-7720-S001**



**BRAV-7720-WP**



**BRAV-7721-S001**



**BRAV-7721-WP**



**CNTI-3A51** (Loongson 3A5000)



**CNTI-R351** (Rockchip RK3588)

**System**

<b>CPU</b>	Intel® Comet lake 10th-Gen Celeron/Pentium/Corei9/i7/i5/i3 CPU, Intel® Q470 PCH	Intel® Comet lake 10th-Gen Celeron/Pentium/Corei9/i7/i5/i3 CPU, Intel® Q470 PCH	Intel® Alder lake-S 12th-Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® Q670 PCH	Intel® Alder lake-S 12th-Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® Q670 PCH	Intel® Alder lake-S 12th-Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® Q670 PCH	Intel® Alder lake-S 12th-Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® Q670 PCH	Loongson3A5000, 4 Cores, 2.3GHz-2.5GHz, LS7A1000 PCH	Rockchip RK3588, 4 Cortex-A76 and 4 Cortex-A55, 2.4GHz	
<b>RAM</b>	2*DDR4 SO-DIMM, 2933MHz, 64GB max.	2*DDR4 SO-DIMM, 2933MHz, 64GB max.	2*262-Pin SODIMM, DDR5 4800MHz, 64GB max.	2*262-Pin SODIMM, DDR5 4800MHz, 64GB max.	2*262-Pin SODIMM, DDR5 4800MHz, 64GB max.	2*262-Pin SODIMM, DDR5 4800MHz, 64GB max.	2*288 Pin DIMM, DDR4 3200MHz, 64GB max.	Onboard memory, 4GB LPDDR4	
<b>Graphics</b>	Intel® UHD Graphics, DirectX 12, OpenGL 4.5, 2*HDMI: 4096x2304@24Hz, 1*VGA: 1920*1200@60Hz, 1*MXM3.1, GPU/AI card<190W, 2*DP, 4K display	Intel® UHD Graphics, support DirectX 12, OpenGL 4.5, 2*HDMI 1.4: 4096 x 2304@24Hz 1*VGA: 1920x1200@60Hz	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0, DP:7680*4320@60Hz, HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent displays	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0, DP:7680*4320@60Hz, HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent displays	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0, DP:7680*4320@60Hz, HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent displays	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0, DP:7680*4320@60Hz, HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent displays	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0, DP:7680*4320@60Hz, HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent displays	Nuclear display	Mali-G610 GPU, OpenGL ES3.2/OpenCL2.2/ Vulkan1.1, 2D&3D acceleration hardware; HDMI:1920*1080@60Hz <b>NPU:6 TOPS, INT4/INT8/INT16/FP16</b>

**I/O Interfaces**

<b>LAN</b>	3*Intel I226V,3*2.5G-LAN, iAMT 13.0/IVpro; 4* Intel I226V with POE+, 10-1000M(S002)	3*Intel I226V,3*2.5G-LAN,iAMT 13.0/IVpro; 4* Intel I226V with POE+, 10-1000M(T002)	2* Intel I226V, 10-1000M; 1* Intel I219LM,10-1000M, iAMT 12.0	2* Intel I226V, 10-1000M; 1* Intel I219LM,10-1000M, iAMT 12.0	2* Intel I226V, 10-1000M; 1* Intel I219LM,10-1000M, iAMT 12.0	2* Intel I226V, 10-1000M; 1* Intel I219LM,10-1000M, iAMT 12.0	2*88E1512, 10-1000M	2*RTL8211F, 10-1000M; 2*RTL8111H,10-1000M
<b>USB</b>	4* USB3.2(10G)+2*USB2.0+2*USB3.0(optional); 2* USB3.2(5G,S002)	4* USB3.2(10G) + 2*USB2.0; 2* USB3.2(5G,T002)	4* USB3.2(10G)+2*USB3.0(5G)	4* USB3.2(10G)+2*USB3.0(5G)	4* USB3.2(10G)+2*USB3.0(5G)	4* USB3.2(10G)+2*USB3.0(5G)	4* USB3.0 + 2* USB2.0	2* USB3.0+2*USB2.0
<b>Display</b>	2* HDMI + 1* VGA; GPU 2*DP	HD graphics 2* HDMI + 1* VGA	1* DP+1*HDMI+1* VGA	1* DP+1*HDMI+1* VGA	1* DP+1*HDMI+1* VGA	1* DP+1*HDMI+1* VGA	1* HDMI + 1*VGA	1*HDMI
<b>Audio</b>	1* Line out + 1* MIC,optional audio	1* Line out + 1* MIC,Realtek ALC662VD	/	/	/	/	1*Line out+1*MIC, Realtek ALC269Q-VC	
<b>Serial Port</b>	2*RS232/422/485 + 2*RS232	2*RS232/422/485 + 2*RS232	2*RS232/422/485	2*RS232/422/485	2*RS232/422/485	2*RS232/422/485	12*RS232/422/485(3*DB44)	1*RS232+1*RS485; 2*CAN (CAN Open2.0,DB9)
<b>DIO</b>	8 bit TTL, programmable input/output 8+16 bit TTL, programmable input/output(S002)	T001: 8 bit TTL, programmable input/output; T002: 8 bit TTL,programmable input/output, 8 bit PNP/NPN 2.5KV input/output	Optional 16bit DIO, TTL , programmable input/output	Optional 16bit DIO, TTL , programmable input/output	Optional 16bit DIO, TTL, programmable input/output	Optional 16bit DIO, TTL signal, programmable input/output	24bit isolated DIO(12bit DI, 12bit DO)	1*8 bit DIO(DB9)

**Storage**

<b>Storage</b>	2*2.5"SATA3 HDD(RAID0,1), 15mm; 1*M.2 2280 M-Key(PCIeX4), NVMe; 1*mSATA(optional)	2*2.5"SATA3 HDD(support RAID0,1), max support dual 15mm HDD, 1*M.2 2280 M-Key(PCIeX4 signal), support NVMe, 1*mSATA(optional)	2*2.5"SATA3 HDD(RAID0/1), 15mmthickness, 1*M.2 2280 M-Key(PCIe4.0X4), NVMe, 1*mSATA(optional)	2*2.5"SATA3 HDD(RAID0/1), 15mmthickness, 1*M.2 2280 M-Key(PCIe4.0X4), NVMe, 1*mSATA(optional)	2*2.5"SATA3 HDD(RAID0/1), 15mm, 1*M.2 2280 M-Key(PCIe4.0X4), NVMe, 1*mSATA(optional)	2*2.5"SATA3; 1*M.2 M-Key 2280(PCIe2.0X4), NVMe	Onboard 32G eMMC, 1*M.2 2242 M-key, NVMe
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**Expansion**

<b>Expansion Port</b>	1*Mini-PCIe(USB2.0+SIM),mSATA/4G LTE; 1*M.2 2230 E-key(PCIeX1/USB+CNVio), WiFi6/BT5.0; 1*M.2 3052 B-key(PCIeX1/USB+SIM), 5G/4G LTE; 1*M.2 2280 M-Key(PCIeX4), NVMe/PCIe; 1*MXM3.1(PCIeX16),up to 190W; JHTECH-02 E/IO, 2*PCIeX4, 2*USB3.2, 2*USB2.0	1*Mini-PCIe(USB2.0+SIM), mSATA/4G LTE; 1*M.2 2230 E-key(PCIeX1/USB+CNVio),WiFi6/BT5.0; 1*M.2 3052 B-key(PCIeX1/USB+SIM), 5G/4G LTE; 1*M.2 2280 M-Key(PCIeX4), NVMe/PCIe; 1*MXM3.1, MLU220-MXM AI card; JHTECH-02 E/IO; 2*PCIeX4, 2*USB3.2, 2*USB2.0	1*Mini PCIe(PCIeX1/USB+SIM),4G LTE/PCIe; 1*Mini PCIe(PCIeX1/SATA),mSATA; 1*M.2 3052 B-Key(PCIeX1/USB+SIM),5G NR; 1*M.2 2280 M-Key(PCIe4.0X4), NVMe; 1*PCIe5.0X16(X16),GPU<450W<300mm 1*PCIe4.0X16(X4),AI card<75W<300mm	1*Mini PCIe(PCIeX1/USB+SIM),4G LTE/PCIe; 1*Mini PCIe(PCIeX1/SATA),mSATA; 1*M.2 3052 B-Key(PCIeX1/USB+SIM),5G NR; 1*M.2 2280 M-Key(PCIe4.0X4), NVMe; 1*PCIe5.0X16(X16),GPU<450W<300mm 1*PCIe4.0X16(X4),AI card<75W<300mm	1*Mini PCIe(PCIeX1/USB+SIM),4G LTE/PCIe; 1*Mini PCIe(PCIeX1/SATA),mSATA; 1*M.2 3052 B-Key(PCIeX1/USB+SIM),5G NR; 1*M.2 2280 M-Key(PCIe4.0X4), NVMe; 2*PCIe5.0X16(X8),GPU<450W<300mm; 2*PCIeX16(4.0X4+3.0X4),AI card<75W<300mm	1*Mini PCIe(PCIeX1/USB+SIM),4G LTE/PCIe; 1*Mini PCIe(PCIeX1/SATA),mSATA; 1*M.2 3052 B-Key(PCIeX1/USB+SIM),5G NR; 1*M.2 2280 M-Key(PCIe4.0X4), NVMe; 2*PCIe5.0X16(X8),GPU<450W<300mm; 2*PCIeX16(4.0X4+3.0X4),AI card<75W<300mm	1*M.2 2280 M-Key(PCIe2.0X4), NVMe 1*M.2 2230 E-Key(PCIeX1/USB2.0), WIFI	1*Full size Mini PCIe(+SIM), 4G LTE; (Opt.) onboard Wifi6/BT5.0
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**Power Supply**

<b>Pwr Consump</b>	DC 9-36V 3-pin, with short circuit protection, over voltage& over current protection	DC 9-36V 3-pin, with short circuit protection, over voltage& over current protection	DC 12V, 1000W max. ; TDP:TBD	DC 9-55V, 600W max. ; TDP:TBD	DC 12V 5-pin 1000W max. ; TDP:TBD	DC 9-55V , 1000W max. ; TDP:TBD	DC 12-36V; TDP: TBD	DC 9-36V ; TDP:TBD
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**Mechanical**

<b>Structure</b>	Temperature controlled fan, SGCC	Aluminum chassis, SGCC	SGCC frame, Aluminum-magnesium alloy chassis, temperature control by PWM fan	SGCC frame, Aluminum-magnesium alloy chassis, temperature control by PWM fan	SGCC frame, Aluminum-magnesium alloy chassis, temperature control by PWM fan	SGCC frame, Aluminum-magnesium alloy chassis, temperature control by PWM fan	Aluminum chassis, SGCC	Aluminum-magnesium alloy, SGCC frame
<b>Dimension (W*H*D)</b>	284*222*82mm	284*222*80.5mm	195*374.7*254.8mm	262*374.7*178mm	245*376.8*254.8mm	230*350*210mm	312*220*78mm	169*100*44.2mm
<b>Net Weight</b>	6.70kg	6.40kg	TBD	TBD	TBD	TBD	TBD	TBD

**Environmental**

<b>Operating Temp</b>	-20~60°C, SSD, airflow	-20~60°C, SSD, airflow	-20~60°C, SSD, with air flow	-20°C~60°C,SSD ,with air flow;	-20~60°C, SSD, air flow			
<b>Storage Temp</b>	-40°C~85°C	-40°C~85°C						
<b>Storage Humidity</b>	10~90%@40°C, No condensation	10~90%@40°C, No condensation	10~95%@40°C, No-condensation	10~95%@40°C, Non-condensing				
<b>Vibration</b>	5grms/5~500Hz/random/during operation(SSD); 1grms/5~500Hz/random/during operation(HDD)	5 grms/5~500Hz/random/during operation(SSD); 1 grms/5~500Hz/random/during operation(HDD)	5 grms/5~500Hz/random/during operation(SSD); 1 grms/5~500Hz/random/during operation(HDD)					
<b>Shock</b>	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)
<b>Certification/ EMC</b>	CE/FCC Class A	CE/FCC Class A						

<b>OS</b>	Windows 10 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project (64-bit), Wind River VxWorks 7	Windows 10 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project (64-bit), Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	UOS /KylinOS/LOONGNIX/openEuler	Android, Linux
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**CNTI-2K10**



**CNTI-2K20**

**System**

CPU	Loonson 2K1000LA, 800MHz-1.0GHz	Loonson 2K2000, 1.5GHz, L2:2MB
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RAM	Onboard memory,DDR3, 1GB/2GB	Onboard memory,DDR4, 8GB
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Graphics	/	VGA:1920x1200@60fps, LVDS:1920x1080@60fps
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**I/O Interfaces**

LAN	2*LAN, 10M-1000M	2*LAN, GNET(CPU),10M-1000M
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USB	2*USB2.0	4*USB3.0 + 2*USB2.0
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Display	/	2*VGA+1*LVDS
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Audio	/	/
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Serial Port	2*RS232+2*RS485+2*CAN (2*7pin)	2*RS232/422/485 + 8*RS232, 1*SD Card
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DIO	1*8 bit GPIO(DB9)	/
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**Storage**

Storage	1*SATA2.0 M.2 2242 B-KEY, standard with 32GB SSD	128GB eMMC; 1*mSATA, 1*SD
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**Expansion**

Expansion Port	1*SATA2.0 M.2 2242 B-KEY; 1*M.2 NGFF 2230 E-KEY (PCIe2.0X1+USB2.0), 4G/WIFI/BT	1*Mini PCIe(PCIe3.0X1),LAN/CAN;
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**Power Supply**

Pwr Consump Input Voltage	DC 5V/3A ; TDP:TBD	DC 9-36V ; TDP:TBD
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**Mechanical**

Structure	SGCC frame	Aluminum-magnesium alloy, SGCC frame
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Dimension (W*H*D)	153*154*46mm	247*151*94.8mm
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Net Weight	0.82KG	2.67KG
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**Environmental**

Operating Temp	-20~60°C, SSD, air flow	-20~60°C, SSD, air flow
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Storage Temp	-40°C~85°C	-40°C~85°C
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Storage Humidity	10~95%@40°C, Non-condensing	10~95%@40°C, Non-condensing
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Vibration	5 grms/5~500Hz/random/during operation(SSD); 1 grms/5~500Hz/random/during operation(HDD)	5 grms/5~500Hz/random/during operation(SSD); 1 grms/5~500Hz/random/during operation(HDD)
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Shock	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)	50g peak acceleration(11ms duration)(SSD); 20g peak acceleration(11ms duration)(HDD)
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Certification/EMC	CE/FCC Class A	CE/FCC Class A
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OS	Buildroot/OpenHarmony/Loongnix/SylixOS	KylinOS/UOS/Loongnix/openEuler
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**JHCTECH** IoT Computer Connecting the Dots

# KGEC

Edge controller



					
	<b>KGEC-6200</b>	<b>KGEC-6300</b>	<b>KGEC-6301</b>	<b>KGEC-6310</b>	<b>KGEC-6500</b>
<b>System</b>					
<b>CPU</b>	Intel® Elkhart lake Soc CPU, Celeron J6412; Celeron N6210	6th/7th Gen Intel® Skylake-S/Kabylake-S Pentium/Core I3/I5/I7 CPU LGA 1151 socket,max support 65W	6th/7th Gen Intel® Skylake-S/Kabylake-S Pentium/Core I3/I5/I7 CPU LGA 1151 socket,max support 65W	8th gen Intel Whiskeylake U:Celeron 4305U; Core U: I3-8145U; I5-8265U; I7-8565U	Intel 10th Gen. Cometlake-S Core i9/i7/i5/i3/Celeron CPU,LGA 1200 Socket
<b>RAM</b>	1* DDR4 SODIMM 3200MHz, 32GB max.	1* DDR4 2400/2133MHz, 16GB max.	1* DDR4 2400/2133MHz, 16GB max.	2* DDR4 2400MHz, 32GB max.	2*DDR4 SO-DIMM 2933MHz, 64GB max.
<b>Graphics</b>	Intel Gen10 UHD Graphics, H.265/HEVC,HW; HDMI2.0: 4096*2304@60Hz	IntelGen.9 HD Graphics,HEVC/H265 HW DP: 4096*2304@60Hz, DVI-I(DVI-D+VGA) DVI-D: 1920*1200@60Hz, VGA: 2560*1600@60Hz	IntelGen.9 HD Graphics,HEVC/H265 HW DP: 4096*2304@60Hz; DVI-I(DVI-D+VGA) DVI-D: 1920*1200@60Hz, VGA: 2560*1600@60Hz	Intel Gen. 9 UHD Graphics,HEVC/H265 HW HD codec HDMI: 4096*2304@60Hz DVI-D: 2560x1600,60Hz	Intel® UHD Graphics,Supports DirectX 12, OpenGL 4.5&OpenCL 2.1 HDMI: 4096*2160@30Hz, DVI-I(DVI-D+VGA): 1920x1200,60Hz
<b>I/O Interface</b>					
<b>LAN</b>	2*Intel I226V, 10-1000M	2*Intel I210AT,10-1000M	2*Intel I210AT, 10-1000M; 4*Intel I210AT(+POE),802.3af(15.4W)	3*Intel I210AT,10-1000M; 1*Intel®I219LM, iAMT12.0 and iVpro	1*Intel I226V, 10M-2.5G,support WOL; 1*Intel®I219LM , support WOL
<b>USB</b>	2* USB3.1, 2*USB2.0	4* USB3.0	4* USB3.0	2*USB3.1 + 2* USB2.0	4*USB3.2 + 3* USB2.0(Build-in)
<b>Display</b>	1* HDMI	1* DP + 1* DVI-I	1* DP + 1*DVI-I	1* DVI-D + 1* HDMI	1* DVI-I + 1*HDMI
<b>Audio</b>	/	/	/	1* Line out + 1* MIC	/
<b>Serial Port</b>	1*RS232/422/485; 1*RS232	2*RS232/422/485 with isolated TVS	2*RS232/422/485 with isolated TVS	2*RS232/422/485	2*RS232/422/485
<b>DIO</b>	6 bit DIO(MI/O)		16-bit Isolator DIO(Phoenix terminal)	8-bit DIO(Phoenix terminal)	/
<b>Storage</b>					
<b>Storage</b>	1*mSATA Full Size,AHCI	1*mSATA full height card	1*2.5" SATA3.0 HDD/SSD 1*mSATA full height card	1*2.5"SATA3.0, 1*mSATA ,AHCI	1*2.5" SATA3.0, 1*mSATA ,AHCI
<b>Expansion</b>					
<b>Expansion</b>	1*Mini PCIe(PCleX1/USB+SIM),4G/Wifi/BT	1*Mini PCIe(PCleX1/USB+SIM),4G/Wifi/BT; Optional 1*PCle3.0 X4(X1) + 1*32bit-PCI; Optional 1*PCle3.0 X4(X1)	1*Mini PCIe(PCleX1/USB+SIM),4G/Wifi/BT; Optional 1*PCle3.0 X4(X1) + 2*32bit-PCI	1*M.2 E-key(PCle X1/USB2.0),Wifi/BT; 1*Mini PCIe(PCle X1/USB+SIM),4G/Wifi/ BT	1*Mini PCIe(PCle X1/USB2.0+SIM),4G/Wifi/BT; Optional 1*PCle3.0 X4(X4), 4*PoE+LAN
<b>Power Supply</b>					
<b>Power&amp; TDP</b>	DC 12V;Optional DC 9-36V(OFX-075) 15.6W(Celeron J6412,32G DDR4,128G SSD)	DC 12-24V input, 2*2-pin; S001(43.7W I7-7700 4GB)/ (49.4W I7-7700 4GB,+Expansion)	DC 12-24V, 2*2-pin; S001(49.2W I7-6700T 4GB) / (52.8W I7-6700T 4GB,+Expansion)	DC 12-24V, 2*2-pin; 31.68W (CPU I3-8145U 4GB)	DC 12-24V, 2*2-pin; 64.8W(I5-10500E,32GB DDR4,128G HDD)
<b>Mechanical</b>					
<b>Structure</b>	Aluminum chassis, SGCC frame	Aluminum chassis, SGCC frame	Aluminum chassis, SGCC frame	Aluminum chassis, SGCC frame	Aluminum chassis, SGCC frame
<b>Dimension (W*H*D)</b>	130*100*40mm	S001(202*151*57.8mm/ 202*151*109.8mm,+Expansion)	S001(202*151*80.8mm/ 202*151*151mm,+Expansion)	202*151*81mm	202*154*57.8mm/202*154*89.5mm(+Expansion)
<b>Weight</b>	750g	S001: 2.52KG/3.52KG(+Expansion)	S001: 3KG/4.4KG(+Expansion)	2.59KG	1.85KG/2.20KG(+Expansion)
<b>Environmental</b>					
<b>Operating temp</b>	-20°C~60°C, SSD	-20°C~60°C, SSD	-20°C~60°C, SSD	-20°C~60°C, SSD	-20°C~60°C, SSD
<b>Storage temp</b>	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C
<b>Storage Humidity</b>	10-95%@40°C, non-condensing	10-95%@40°C, non-condensing	10-95%@40°C, non-condensing	10-95%@40°C, non-condensing	10-90%@40°C, non-condensing
<b>Vibration</b>	5 grms/5-500Hz/random/during operation(SSD); 1 grms/5-500Hz/random/during operation(HDD)	5 grms/5-500Hz/random/during operation(SSD); 1 grms/5-500Hz/random/during operation(HDD)	5grms/5-500Hz/random/during operation(SSD); 1grms/5-500Hz/random/during operation(HDD)	5grms/5-500Hz/random/during operation(SSD); 1grms/5-500Hz/random/during operation(HDD)	5grms/5-500Hz/random/during operation(SSD); 1grms/5-500Hz/random/during operation(HDD)
<b>Shock</b>	50g peak acceleration(duration;11ms)(SSD); 20g peak acceleration(duration;11ms)(HDD)	50g peak acceleration(duration;11ms)(with SSD); 20g peak acceleration(duration;11ms)(with HDD)	50g peak acceleration(duration;11ms)(with SSD); 20g peak acceleration(duration;11ms)(with HDD)	50g peak acceleration(duration;11ms)(with SSD); 20g peak acceleration(duration;11ms)(with HDD)	50g peak acceleration(duration;11ms)(with SSD); 20g peak acceleration(duration;11ms)(with HDD)
<b>Certification/EMC</b>	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A
<b>OS</b>	RTOS: INtime, EC-Win, RTX-2014/2016, Ubuntu Preempt-RT,Win11/Win10,SUSE, Ubuntu, Wind River, Red Hat Enterprise	RTOS: INtime, EC-Win, RTX-2014/2016 and Ubuntu Preempt-RT,Windows 7, Windows 10, Linux Fedora Ubuntu(Note: 7th gen Intel® Kabylake-S processor does not support Windows 7 32-bit)	RTOS: INtime, EC-Win,RTX-2014/2016,Ubuntu Preempt-RT,Windows 7, Windows 10, Linux Fedora Ubuntu (Note: 7th gen Intel® Kabylake-S processor does not support Windows 7 32-bit)	RTOS: INtime, EC-Win, RTX-2014/2016 and Ubuntu Preempt-RT Windows 10, SUSE, Ubuntu, Wind River, Red Hat Enterprise	RTOS: INtime, EC-Win, RTX-2014/2016, Ubuntu Preempt-RT&Xenomai Windows 10, SUSE, Ubuntu, VXWork, Red Hat Enterprise

**JHCTECH** IoT Computer  
Connecting the Dots

**JHCTECH** IoT Computer  
Connecting the Dots

**KMDA**

Embedded Box Computer





## KMDA-2602

## KMDA-2602/T002

## KMDA-2620

## KMDA-2701

## KMDA-2702

## KMDA-3201

## KMDA-3202

## KMDA-3212

### Processor

CPU	Intel Baytrail-D Celeron J1900 ,Frequency 2.0~2.42GHz, 4C4T, 2M cache, 22nm, TDP 10W	Intel Baytrail-D Celeron J1900 ,Frequency 2.0~2.42GHz, 4C4T, 2M cache, 22nm, TDP 10W	Intel® Apollolake Atom E3940 CPU	Intel Baytrail-D Celeron J1900 ,Frequency 2.0~2.42GHz, 4C4T, 2M cache, 22nm, TDP 10W	Intel Baytrail-D Celeron J1900 , Frequency 2.0~2.42GHz, 4C4T, 2M cache, 22nm, TDP 10W	Intel Skylake-U/Kabylake-U CPU Celeron/Core i3/i5/i7	Intel Skylake-U/Kabylake-U CPU Celeron/Core i3/i5/i7	Intel Skylake-U/Kabylake-U CPU Celeron/Core i3/i5/i7	
RAM	1*DDR3L,1333MHz,SODIMM, 8GB max.	1*DDR3L,1333MHz,SODIMM, 8GB max.	1*DDR3L, 1866MHz, SODIMM, 8GB max.	1*DDR3L, 1333MHz, SODIMM, 8GB max.	1*DDR3L, 1333MHz, SODIMM, 8GB max.	2*260-Pin SODIMM, DDR4,2133MHz, 32GB max.	2*260-Pin SODIMM, DDR4,2133MHz, 32GB max.	1*DDR4,SODIMM,2133MHz, 16GB max.	
Graphics	Intel HD Graphics, Support synchronous or asynchronous dual display, VGA:1920*1200@60Hz, HDMI:1920*1080@60Hz, support OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264	Intel HD Graphics, Support synchronous or asynchronous dual display VGA:1920*1200@60Hz, HDMI:1920*1080@60Hz, support OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264	Gen. 9th Intel HD Graphics, DP:4096*2160@60Hz, HDMI:3840*2160@30Hz,support OpenGL 4.3, DirectX 11, OpenCL 2.0, MPGE2, H.265	Intel HD Graphics, Support dual independent display, VGA:1920*1200@60Hz, HDMI:1920*1080@60Hz,support OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264	Intel HD Graphics, Support dual independent display VGA:1920*1200@60Hz, HDMI:1920*1080@60Hz,support OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264	Intel HD Graphics, Support dual independent display VGA:1920*1200@60Hz, HDMI:1920*1080@60Hz,support OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264	Intel Gen. 9th HD Graphics, HEVC/H265 HW HD codec, HDMI: 3840*2160@30Hz, DP: 4096*2304@60Hz	Intel Gen. 9th HD Graphics, HEVC/H265 HW HD codec, HDMI: 3940*2160@30Hz, DP: 4096*2160@60Hz	Intel Gen. 9th HDGraphics, HEVC/H265 HW HD codec, HDMI: 4096*2304@24Hz, DP:4096*2304@60Hz,VGA:1920*1200@60Hz

### I/O Port

LAN	4*Intel I211AT PCIe, 10-1000M	2*Intel I211AT PCIe, 10-1000M	4/2*Intel I211AT PCIe, 10-1000M	4*Intel I211AT PCIe, 10-1000M	3*Intel I211AT PCIe, 10-1000M	2*Intel I211AT PCIe, 10-1000M 1*Intel I219 LM support Intel Vpro	2*Intel I211AT PCIe, 10-1000M, 1*Intel I219 LM support Intel Vpro, 4*Intel I211AT PCIe Full bandwidth POE	2*Intel I211AT PCIe, 10-1000M, 1*Intel I219 LM support Intel Vpro,
USB	1* USB3.0, 5*USB2.0 , 1*USB2.0 (Build-in)	1* USB3.0, 3*USB2.0	2* USB3.0, 4/2*USB2.0 , 1*USB2.0 (Build-in)	1* USB3.0, 5*USB2.0 , 1*USB2.0 (Build-in)	1* USB3.0, 5*USB2.0 , 1*USB2.0 (Build-in)	4* USB3.0, 2*USB2.0 , 1*USB2.0 (Build-in)	4* USB3.0, 4*USB2.0 , 1*USB2.0 (Build-in)	4* USB3.0, 2*USB2.0 , 1*USB2.0 (Build-in)
Display	1*HDMI+ 1*VGA	1*HDMI+ 1*VGA	1*DP+1*HDMI	1*VGA+1*HDMI	1*VGA+1*HDMI	1*DP+1*HDMI	1*DP+1*HDMI	1*DP+1*HDMI+1*VGA
Audio	1*Line out,Realtek ALC662VD	1*Line out,Realtek ALC662VD	1*Line out,Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD	1*Line out , Realtek ALC662VD	1*Line out+1*Mic,Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD
COM/ Others	2*RS232/422/485, 2*RS232, 2*RS232/485, 1*2 pin terminal, Remote switch, USB mouse/keyboard	2*RS232/422/485, 1*2 pin terminal, Remote switch, USB mouse/keyboard	4/2*RS232/422/485, 2*RS232, 1*2 pin terminal, Remote switch, USB mouse/keyboard	4*RS232/422/485, 2*RS232, 1*2 pin terminal, Remote switch, USB mouse/keyboard	8*RS232/422/485, 2*RS232, 1*2 pin terminal, Remote switch, USB mouse/keyboard	2*RS232/422/485, 4*RS232, 1*2 pin terminal, Remote switch, USB mouse/keyboard	2*RS232/422/485, 4*RS232, 1*PS/2(mouse/keyboard)	2*RS232/422/485, 4*RS232, 1*PS/2(mouse/keyboard)
DIO	8-bit TTL, Programmed input-output	8-bit TTL, Programmed input-output	8-bit TTL, Programmed input-output	24-bit TTL, Programmed input-output	16-bit TTL, Programmed input-output	8-bit TTL, Programmed input-output	8-bit TTL, Programmable input and output 8-bit Iso. DI(High:5-24V,Low:0-1.5V) and 8-bit Iso. DO(100mA)	8-bit TTL, Programmed input-output

### Storage

Storage	1*2.5" HDD SATA2 Bay, 3.0 Gbps, 1*mSATA Full-height card, support AHCI	1*2.5" HDD SATA2 Bay, 3.0 Gbps, 1*mSATA Full-height card, support AHCI	1*2.5" HDD SATA3 Bay, 6.0 Gbps, 1*mSATA Full-height card, support AHCI	1*3.5" HDD SATA2 Bay, 3.0 Gbps, 1*mSATA Full-height card, support AHCI	1*2.5" HDD SATA2 Bay, 3.0 Gbps, 1*mSATA Full-height card, support AHCI	1/2*2.5" HDD SATA3 Bay, 6.0 Gbps, 1*mSATA Full-height card, support AHCI	1*2.5" SATA3 Bay, 6.0 Gbps, SSD/HDD, 1*mSATA Full-height card, support AHCI	1*2.5" SATA3 Bay, 6.0 Gbps, SSD/HDD, 1*mSATA Full-height card, support AHCI
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### Expansion

Expansion Port	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT, 1*I-port(LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT,	1*M.2 B-key, with SIM slot, support 4G/Wifi/BT, 1*I-port (LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT	1*Mini PCIe, with SIM slot, 1*M.2 B-key with PCIe+USB signal &SIM slot,support dual 4G/Wifi/BT, 1*I-port(LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, 1*M.2 B-key with PCIe+USB signal &SIM slot,support dual 4G/Wifi/BT, 1*I-port(LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT,
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### Power Supply

Input voltage	DC IN 9~36V, D-Jack with M8 interface, short circuit protection, OVP&OCP	DC IN 9~36V, D-Jack with M8 interface, short circuit protection, OVP&OCP	DC IN 9~36V, D-Jack with M8 interface, short circuit protection, OVP&OCP	DC IN 9~36V, D-Jack with M8 interface, short circuit protection, OVP&OCP	DC IN 9~36V, D-Jack with M8 interface, short circuit protection, OVP&OCP	DC IN 9~30V, 3pin terminal, With reverse polarity protection, short circuit protection, OVP&OCP	DC IN 9~30V, 3pin terminal, With reverse polarity protection, short circuit protection, OVP&OCP	DC IN 12~24V, 3pin terminal(front panel),
TDP	14.4W(2.5" HDD)	14.4W(2.5" HDD)	20.04W(E3940 CPU,4G DDR3L)	19.2W(3.5" HDD)	15.6W(2.5" HDD)	27.72W(I5-7200U 8GB)	27.72W(I5-7200U 8GB)	58.56W(I5-7200U 16GB DDR4)

### Mechanical

Structure	Top/Bottom Aluminum Chassis, SGCC frame	Top/Bottom Aluminum Chassis, SGCC frame	Top/Bottom Aluminum Chassis, SGCC frame	U-shaped Aluminum Chassis, SGCC frame	U-shaped Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame
Color	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray
Installation	desktop mounting & VESA 100*100mm	desktop mounting &VESA 100*100mm	desktop mounting &VESA 100*100mm	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting
Dimension	155*111.8*65mm	155*111.6*49mm	155*111.8*65mm	210*144*82.7mm	210*144*82.7mm	210*144.3*75.5mm	210*144.3*75.5mm	200*200*85.3mm
Net Weight	1.30KG	1.05KG	1.30KG	2.60KG	2.60KG	2.20KG	2.20KG	3.3KG

### Environmental

Operating Temp	-20°C~65°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~65°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~70°C,SSD,with air flow -10°C~50°C,HDD,with air flow	-20°C~70°C,SSD,with air flow -10°C~50°C,HDD,with air flow	-20°C~70°C,SSD,with air flow -10°C~50°C,HDD,with air flow			
Storage Temp	-40°C~85°C							
Storage Humidity	10~90%@40°C, No- condensation							
Vibration	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)							
Shock	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)							
Certificate/ EMC	CE/FCC Class A							
OS	Windows 7, Windows 8.1, Windows 10, Linux Fedora,Ubuntu	Windows 7, Windows 8.1, Windows 10, Linux Fedora,Ubuntu	Windows 7, Windows 8.1, Windows 10, Linux Fedora,Ubuntu	Windows 7, Windows 8.1, Windows 10, Linux Fedora,Ubuntu	Windows 7, Windows 8.1, Windows 10, Linux Fedora,Ubuntu	Windows 7, Windows 10, Linux Fedora,Ubuntu	Windows 7, Windows 10, Linux Fedora,Ubuntu	Windows 7, Windows 10, Linux Fedora,Ubuntu
Watchdog timer	Programmable via software 1 to 255 second							



## KMDA-3230

## KMDA-3601

## KMDA-3602

## KMDA-3820

## KMDA-3610

## KMDA-3920

## KMDA-3920ETC

## KMDA-3921

### Processor

CPU	Intel® Whiskey lake U Celeron/Core i3/i5/i7	Intel Skylake-S/Kabylake-S Celeron/Pentium/Core i3/i5/i7, Q170 Chipset	Intel Skylake-S/Kabylake-S Celeron/Pentium/Core i3/i5/i7, Q170 Chipset	Intel Skylake-U 3855/Kabylake-U Celeron/Core i3/i5/i7	Intel Skylake-S/Kabylake-S Celeron/Pentium/Core i3/i5/i7, H110 Chipset	Intel Skylake-S/Kabylake-S Celeron/Pentium/Core i3/i5/i7 H110 Chipset, optional Q170 Chipset	Intel Skylake-S/Kabylake-S Celeron/Pentium/Core i3/i5/i7 H110 Chipset, optional Q170 Chipset	Intel Skylake-S/Kabylake-S Celeron/Pentium/Core i3/i5/i7 H110 Chipset, optional Q170 Chipset	
RAM	2*DDR4 SODIMM,2400MHz, 32GB max.	2*260-Pin SODIMM, DDR4,2133MHz, 32GB max.	2*260-Pin ,DDR4,2133/2400MHz, 32GB max.	1*260-Pin ,DDR4,2133MHz, Max. 16GB	2*260-Pin ,DDR4,2133/2400MHz, 32GB max.	2*260-Pin ,DDR4,2133/2400MHz, 32GB max.	2*260-Pin ,DDR4,2133/2400MHz, 32GB max.	2*260-Pin ,DDR4,2133/2400MHz, 32GB max.	
Graphics	Intel® Gen. 9 UHD Graphics,Support dual independent display HDMI: 4096*2304@24Hz DP: 4096*2304@60Hz	Intel Gen. 9 HD Graphics, HEVC/H265 HW HD codec,support 3 independent display DP: 4096*2304@60Hz,VGA:2650*1600@60Hz, HDMI: 3840*2160@30Hz,	Intel® Gen. 9 HD Graphics, HEVC/H265 HW HD codec, DP/HDMI support dual 4K HD display 1*MXM3.1 GPU module, support max. 120W GPU, 3*DP & 1*HDMI four 4K display	Intel Gen. 9th HD Graphics, HEVC/H265 HW HD codec, HDMI: 4096*2304@24Hz, DP: 4096*2304@60Hz,VGA:1920*1200@60Hz	Intel Gen. 9 HD Graphics,HEVC/H265 HW HD codec, HDMI: 3840*2160@30Hz, DP: 4096*2304@60Hz,VGA: 1920*1200@60Hz, support 2 independent display+1 copy display	Intel Gen. 9 HD Graphics,HEVC/H265 HW HD codec, HDMI: 3840*2160@30Hz, DP: 4096*2304@60Hz,VGA: 1920*1200@60Hz, support 3 independent display(Intel Q170)	Intel Gen. 9 HD Graphics,HEVC/H265 HW HD codec, HDMI: 3840*2160@30Hz, DP: 4096*2304@60Hz,VGA: 1920*1200@60Hz, support 3 independent display(Intel Q170)	Intel Gen. 9 HD Graphics,HEVC/H265 HW HD codec, HDMI: 3840*2160@30Hz, DP: 4096*2304@60Hz,VGA: 1920*1200@60Hz, support 3 independent display(Intel Q170)	Intel Gen. 9 HD Graphics,HEVC/H265 HW HD codec, HDMI: 3840*2160@30Hz, DP: 4096*2304@60Hz,VGA: 1920*1200@60Hz, support 3 independent display (Intel Q170)

### I/O Port

LAN	4*Intel I210AT PCIe, 10-1000M, 1*Intel®I219LM	2*Intel I210AT PCIe,10-1000M, 1*Intel I219 LM support Intel Vpro, 4*Intel I210AT Full bandwidth POE, optional 8/11"Gig LAN	2*Intel I210AT PCIe,10-1000M, 1*Intel I219 LM support Intel Vpro, 4*Intel I210AT PCIe Full bandwidth POE, optional 4*LAN	2*Intel I211AT PCIe ,10-1000M, 1*Intel I219 LM support Intel Vpro,	1*Intel I211AT PCIe ,10-1000M, 1*Intel I219 LM,support Intel Vpro,	1*Intel I211AT PCIe ,10-1000M, 1*Intel I219 LM support Intel Vpro(Intel Q170),	1*Intel I211AT PCIe ,10-1000M, 1*Intel I219 LM support Intel Vpro(Intel Q170),	1*Intel I211AT PCIe ,10-1000M, 1*Intel I219 LM. support Intel Vpro(Intel Q170),
USB	4* USB3.1, 2*USB2.0	6* USB3.0, 2*USB2.0 , 1*USB2.0 (Build-in)	6* USB3.0, 2*USB2.0 , 1*USB2.0 (Build-in)	4* USB3.0, 2*USB2.0 , 1*USB2.0 (Build-in)	4* USB3.0, 2*USB2.0 , 1*USB2.0 (Build-in)	4* USB3.0, 2*USB2.0 , 1*USB2.0 (Build-in)	4* USB3.0, 1*USB2.0 (Build-in)	4* USB3.0, 2* USB 2.0, 1*USB2.0 (Build-in)
Display	1*DP+1*HDMI	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA
Audio	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic,Realtek ALC662VD	1*Line out+1*Mic,Realtek ALC662VD	1*Line out+1*Mic,Realtek ALC662VD	1*Line out+1*Mic,Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD
COM/ Others	2*RS485, 3*RS232,	2*RS232/422/485, 2*RS232,	2*RS232/422/485	2*RS232/422/485, 2*RS232, 1*PS/2(mouse/keyboards)	2*RS232/422/485, 2*RS232, 1*PS/2(mouse/keyboards)	2*RS232/422/485, 2*RS232, 1*PS/2(mouse/keyboards)	2*RS232/422/485, 8*RS232, 1*PS/2(mouse/keyboards)	2*RS232/422/485 , 2*RS232, 1*PS/2(mouse/keyboards)
DIO	8-bit iso DIO(4-bit 2.5KV optical Iso. DO,4-bit 2.5KV optical Iso. DI)	16/24-bit optical Iso. DIO optional 16-bit TTL Programmable input and output	16/24-bit optical Iso. DIO optional 16-bit TTL Programmable input and output	8-bit TTL, Programmable DIO optional 16-bit TTL Programmable input and output	8-bit TTL, Programmable DIO 16-bit TTL, Programmable DIO	8-bit TTL, Programmable DIO	16-bit Programmable DIO (2*10Pin) 16-bit Programmable DIO(DB25),TTL	8-bit DIO(2*5Pin) 16-bit DIO(build-in),TTL, programmable input & output

### Storage

Storage	1*2.5" SATA port, 1*mSATA Full-height card, support AHCI	2*2.5" SATA,HDD/SSD, 1*mSATA Full-height card, 1*M.2 B-key with SIM slot	1*2.5" SATA3,HDD/SSD, 1*mSATA Full-height card, 1*M.2 B-key with SIM slot	1*2.5" SATA3,HDD/SSD, 1*mSATA Full-height card, support AHCI	2*2.5" SATA3,HDD, 1*mSATA Full-height card, 1*M.2 2242 B-key	2*2.5" SATA3 HDD,support RAID0,1(Intel Q170), 1*mSATA,1*M.2 2242 B-key	2*2.5" SATA3 HDD,support RAID0,1(Intel Q170), 1*mSATA,1*M.2 2242 B-key	2*2.5" SATA3,HDD,support RAID0,1(Intel Q170), 1*mSATA,1*M.2 2242 B-key
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### Expansion

Expansion Port	1*Mini PCIe, with SIM slot, support 3G/4G/Wifi/ BT/ GPRS,1*M.2 E-key 2230 Wifi/BT module expansion, 1*I-Port(LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, 1*half length Mini PCIe,support dual 4G LTE/Wifi/BT, 1*I-Port(LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, 1*half length Mini PCIe,support dual 4G LTE/Wifi/BT & GPS/BDS 1*I-port(LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT,1* PCIe X4(X4 signal), 1*PCIe X4(X1signal),or 2*PCI 1*I-port(LPT/USB2.0/Mini PCIe...etc)	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT	1*Mini PCIe, with SIM slot, support 4G LTE/Wifi/BT, 1*PCIe X16, 1*PCIe X4, or 2*PCI, 1*I-port(LPT/USB2.0/Mini PCIe)	1*Mini PCIe, with SIM slot, support 4G LTE/Wifi/BT, 1*PCIe X16, or 1*PCI	1*Mini PCIe, with SIM slot, support 4G/Wifi/BT, 1*PCIe X16,1*PCIe X4(X1 signal)+2*PCI, or 2*PCIeX16(X8)+1*PCIeX8(X4)
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### Power Supply

Input voltage	DC IN 9~36V, 3pin terminal,	DC 6~48V input,	DC 6~48V input,	DC 12~24V input,	DC 12~24V input,	DC 12~24V input,	DC 12~24V input,	DC 12~24V input,
TDP	30W (I5-8265U , 8GB DDR4, 128GB SSD)	38W(I5-7500T , 4GB RAM, 128G SSD)	115.92W (I5-7500T +GTX 1060M GPU)	58.56W (I5-7200U 16GB DDR4)	68.4W (I7-6700T CPU 16GB DDR4)	68.78W (I7-6700T , 4GB DDR4, 1TB HDD)	68.78W (I7-6700T , 4GB DDR4, 1TB HDD)	68.78W (I7-6700T , 4GB DDR4, 1TB HDD)

### Mechanical

Structure	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC cover	Aluminum Chassis, SGCC frame and cover	Aluminum rectangular cooling plates, SGCC paint main cabinet	Aluminum rectangular cooling plates, SGCC paint main cabinet	Aluminum rectangular cooling plates, SGCC paint main cabinet	Aluminum rectangular cooling plates, SGCC paint main cabinet	Aluminum Chassis, SGCC frame
Color	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray
Installation	desktop mounting	desktop mounting	desktop mounting,Anti-vibration plane	desktop mounting	desktop mounting	desktop mounting,wall-mount	desktop mounting,wall-mount	desktop mounting,wall-mount
Dimension	210*147*78mm	284*222*84.7mm	284*222*81mm	200*200*128.3mm	221*251*88mm	220*250*131mm	220*250**131.5mm	220*250**172mm
Net Weight	2.29KG	4.65KG	5.60KG(non GPU)	3.65KG	4.84KG	5.27KG	5.27KG	5.58KG

### Environmental

Operating Temp	-20°C~70°C,SSD,with air flow -10°C~50°C,HDD,with air flow	-20°C~65°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~65°C,SSD,with air flow -10°C~50°C,HDD,with air flow	-20°C~70°C,SSD,with air flow -10°C~50°C,HDD,with air flow	-20°C~65°C,SSD,with air flow -10°C~55°C,HDD,with air flow			
Storage Temp	-40°C~85°C							
Storage Humidity	10~90%@40°C, No- condensation							
Vibration	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5.5 grms/5~500Hz/random/operation (SSD) 1.5 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)
Shock	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)							
Certificate /EMC	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A,E-Mark	CE/FCC Class A				
OS	Windows 10, SUSE, Ubuntu, Wind River, Red Hat Enterprise	Windows 7, Windows 10, Linux Fedora,Ubuntu						
Watchdog timer	Programmable via software 1 to 255 second							

# Product Listing



**KMDA-5610/S001**

**KMDA-5610/S002**

**KMDA-5920/S001**

**KMDA-5920/S002**

**KMDA-5921/S001**

**KMDA-5921/S002**

**KMDA-6610**

**KMDA-6920**

	KMDA-5610/S001	KMDA-5610/S002	KMDA-5920/S001	KMDA-5920/S002	KMDA-5921/S001	KMDA-5921/S002	KMDA-6610	KMDA-6920	
<b>Processor</b>									
CPU	Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron LGA1151 processor H310 chipset	Intel® Coffee lake 9th/8th-Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1151 CPU Q370 chipset	Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron LGA1151 processor H310 chipset	Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron LGA1151 processor Q370 chipset	Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron LGA1151 processor H310 chipset	Intel® Coffee lake 9th/8th-Gen Core™ i7/i5/i3/Pentium/Celeron LGA1151 processor Q370 chipset	Intel® Comet lake 10th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1200 CPU H420E Chipset	Intel® Comet lake 10th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1200 CPU H420E Chipset	
RAM	2*260-Pin ,DDR4,2400/2666MHz, 64GB max.	4*260-Pin ,DDR4,2400/2666MHz, 128GB max.	2*260-Pin ,DDR4,2400/2666MHz, 64GB max.	4*260-Pin ,DDR4,2400/2666MHz, 128GB max.	2*260-Pin ,DDR4,2400/2666MHz, 64GB max.	4*260-Pin ,DDR4,2400/2666MHz, 128GB max.	2*260-Pin ,DDR4,2933MHz, 64GB Max.	2*260-Pin ,DDR4,2933MHz, 64GB Max.	
Graphics	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1 or PCIe X16, DP:4096*2304@60Hz,VGA:1900*1200@60Hz, HDMI:3840*2160@30Hz(2 independent displays, 1 Copy Display)	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1, DP:4096*2304@60Hz,VGA:1920*1200@60Hz, DP:4096*2304@60Hz(3 independent display)	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1 or PCIe X16, DP:4096*2304@60Hz, VGA:1900*1200@60Hz, HDMI:4096*2160@30Hz(2 independent displays, 1 Copy Display)	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1 or PCIe X16, DP:4096*2304@60Hz, VGA:1900*1200@60Hz, support 3 independent display	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1 or PCIe X16, DP:4096*2304@60Hz,VGA:1900*1200@60Hz, HDMI:4096*2160@30Hz(2 independent displays, 1 Copy Display)	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1 or PCIe X16, DP:4096*2304@60Hz,VGA:1900*1200@60Hz, support 3 independent display	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1 or PCIe X16, DP:4096*2304@60Hz, VGA:1900*1200@60Hz, support 3 independent display	Intel UHD Graphics, Supports DirectX12, OpenGL 4.5; DP:4096*2304@60Hz, VGA:1900*1200@60Hz, HDMI:4096*2160@30Hz(2 independent display)	Intel UHD Graphics, Supports DirectX12, OpenGL 4.5; DP:4096*2304@60Hz, VGA:1900*1200@60Hz, HDMI:4096*2160@30Hz(2 independent display)
<b>I/O Port</b>									
LAN	1*Intel I210AT PCIe ,10-1000M, 1*Intel I219 LM,	2*Intel I211AT/I210AT, 10-1000M, WOL; 1*Intel I219 LM, 10-1000M, iAMT13.0,yPro;	1*Intel I210AT PCIe ,10-1000M, 1*Intel I219 LM,	2*Intel I210AT PCIe ,10-1000M, 1*Intel I219 LM, support Intel Vpro	1*Intel I210AT PCIe ,10-1000M, 1*Intel I219 LM	2*Intel I210AT PCIe ,10-1000M, 1*Intel I219 LM support Intel Vpro	1*Intel I226V, PCIe X1, 10M-2.5G, WOL; 1*Intel I219 LM, 10-1000M, WOL	1*Intel I226V, PCIe X1, 10M-2.5G, WOL; 1*Intel I219 LM, 10-1000M, WOL	
USB	4* USB3.1, 2*USB2.0, 1*USB2.0(Build-in)	6* USB3.1, 2*USB2.0, 2*USB2.0(Build-in)	4* USB3.1, 2*USB2.0, 1*USB2.0(Build-in)	6* USB3.1, 2* USB2.0, 2*USB2.0(Build-in)	4* USB3.1, 2*USB2.0, 1*USB2.0(Build-in)	6* USB3.1, 2*USB2.0, 2*USB2.0(Build-in)	4* USB3.2 Gen1, 2*USB2.0, 2*USB2.0(Build-in)	4* USB3.2 Gen1, 2*USB2.0, 2*USB2.0(Build-in)	
Display	1*DP+1*HDMI+1*VGA	2*DP+1*VGA	1*DP+1*HDMI+1*VGA	2*DP+1*VGA	1*DP+1*HDMI+1*VGA	2*DP+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	
Audio	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic,Realtek ALC662	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC662VD	1*Line out+1*Mic, Realtek ALC 897	1*Line out+1*Mic, Realtek ALC 897	
COM/ Others	2*RS232/422/485, 2*RS232,	2*RS232/422/485, 2*RS232;	2*RS232/422/485, 2*RS232,	2*RS232/422/485, 2*RS232,	2*RS232/422/485, 2*RS232,	2*RS232/422/485, 2*RS232,	2*RS232/422/485, 2*RS232; 1*LPT, 1*PS/2	2*RS232/422/485, 2*RS232; 1*LPT, 1*PS/2	
DIO	16-bit iso DIO: 8-bit Iso. DI(High:5-24V,Low:0-1.5V) and 8-bit Iso. DO(200mA)	16 bit iso. DIO(2*10pin); 16 bit DIO(2*10pin)	16-bit iso DIO: 8-bit Iso. DI(High:5-24V,Low:0-1.5V) and 8-bit Iso. DO(200mA)	16-bit iso DIO: 8-bit Iso. DI(High:5-24V,Low:0-1.5V) and 8-bit Iso. DO(200mA)	16-bit iso DIO: 8-bit Iso. DI(High:5-24V,Low:0-1.5V) and 8-bit Iso. DO(200mA)	16-bit iso DIO: 8-bit Iso. DI(High:5-24V,Low:0-1.5V) and 8-bit Iso. DO(200mA)	8-bit DIO,TTL 16-bit DIO(2*10 pin)	8-bit DIO,TTL 16-bit DIO(2*10 pin)	
<b>Storage</b>									
Storage	2*2.5" SATA3,HDD, 1*mSATA,with SIMslot,support 4G	2*2.5" SATA3,RAID0,1; 1*Mini PCIe(SATA3.0/USB2.0), mSATA	2*2.5" SATA3,HDD, 1*mSATA,with SIM slot ,support 4G	2*2.5" SATA3,support RAID0,1, 1*M.2 M-Key,PCIex4 Gen3.0, support NVME storage	2*2.5" SATA3,HDD, 1*full length Msata with SIM slot,support 4G	2*2.5" SATA3, support RAID0,1, 1*M.2 M-Key,PCIex4 Gen3.0, support NVME storage	2*2.5" SATA3, 6Gbps; 1*mSATA(SATA3.0/USB2.0)	2*2.5" SATA3, 6Gbps; 1*mSATA(SATA3.0/USB2.0)	
<b>Expansion</b>									
Expansion Port	1*M.2 E-Key 2230, Support Gigabit WFI module, 1*I-port(LPT/USB2.0/16-bit DIO/Mini PCIe)	1*M.2 E-Key 2230(PCIeX1&USB2.0); 1*Mini PCIe(SATA3.0/USB2.0+SIM)	1*M.2 E-Key 2230, Support Gigabit WFI module, 1*PCIe X16, 1*PCIe X4, 1*I-port(LPT/USB2.0/16-bit DIO/Mini PCIe)	1*M.2 B-Key,with SIM slot. support5G, 1*M.2 E-Key, 1*PCIe X16,1*PCIe X4, 1*Mini PCIe,with SIM slot. support4G/WIFI/BT	1*M.2 E-Key 2230, Support Gigabit WFI module/BT5.0 1*PCIe X16, 1*PCIe X4, 2*32-bit PCI 1*I-port(LPT/USB2.0/16-bitDIO/Mini PCIe)	1*M.2 B-Key,with SIM slot. support 5G, 1*M.2 E-Key, 1*Mini PCIe,with SIM slot. support4G/WIFI/BT, 1*I-port(LPT/USB2.0/16-bit DIO/Mini PCIe), 2*PCIe X8,2*PCIe X4 or 1*PCIe X16,1*PCIe X4,2*PCI	1*Mini PCIe(PCIeX1/USB2.0+SIM), 4G LTE/PCIe;	1*PCIe3.0 X16(X16)+1*PCIe3.0 X16(X4) ; or 1*PCIe3.0 X16(X16)+ 1*32-bit PCI; 1*Mini PCIe(PCIeX1/USB2.0+SIM), 4G LTE/PCIe;	
<b>Power Supply</b>									
Input voltage	DC IN 9-36V ,with protection of short circuit, over voltage, over current;	DC IN 9-36V , with protection of short circuit, over voltage, over current	DC IN 9-36V ,with protection of short circuit, over voltage, over current	DC IN 9-36V ,with protection of short circuit, over voltage, over current	DC IN 9-36V ,with protection of short circuit, over voltage, over current	DC IN 9-36V ,with protection of short circuit, over voltage, over current	DC IN 9-36V ,with protection of short circuit, over voltage, over current	DC IN 9-36V ,with protection of short circuit, over voltage, over current	
TDP	96W(i7-8700 ,32G DDR4,128G SSD)	功耗:60.5W (i7-8700T , 32G DDR4, 128G SSD)	60.5W(i7-8700T,16G DDR4,128G SSD)	60.5W(i7-8700T,16G DDR4,128G SSD)	48.5W(i7-9700,16G DDR4,128G SSD)	48.5W(i7-9700,16G DDR4,128G SSD)	59.5W(i5-10500 /4G DDR4/256G SSD)	57.2W(i7-10700TE /4G DDR4/256G SSD)	
<b>Mechanical</b>									
Structure	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	
Color	Silver white + Aquamarine	Silver white + Aquamarine	Silver white + Aquamarine	Silver white + Aquamarine	Silver white + Aquamarine	Silver white + Aquamarine	Silver white + Aquamarine	Silver white + Aquamarine	
Installation	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting	
Dimension	230*267.3*92mm	230*267.3*92mm	230*273*143mm	230*273*143mm	230*273*204mm	230*273*204mm	230*267.3*92mm	230*273*143mm	
Net Weight	5.1KG	5.1KG	5.9KG	5.9KG	7.25KG	7.25KG	5.12KG	5.9KG	
<b>Environmental</b>									
Operating Temp	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	
Storage Temp	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	
Storage Humidity	10~90%@40°C, No- condensation	10~95%@40°C, No-condensation	10~90%@40°C, No- condensation	10~90%@40°C, No- condensation	10~90%@40°C, No- condensation	10~90%@40°C, No- condensation	10~90%@40°C, No- condensation	10~90%@40°C, No- condensation	
Vibration	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	
Shock	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	
Certificate /EMC	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	
OS	Windows 10 Enterprise & IOT Enterprise(64-bit) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) Wind River VxWorks 7	Windows 10 Enterprise & IOT Enterprise (64 bit) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) Wind River VxWorks 7	Windows 10 Enterprise & IOT Enterprise (64-bit) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) Wind River VxWorks 7	Windows 10 Enterprise & IOT Enterprise (64-bit) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) Wind River VxWorks 7	Windows 10 Enterprise & IOT Enterprise (64-bit) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) Wind River VxWorks 7	Windows 10 Enterprise & IOT Enterprise (64-bit) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) Wind River VxWorks 7	Win11, Windows 10 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project (64-bit), Wind River VxWorks 7	Win11, Windows 10 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project (64-bit), Wind River VxWorks 7	
Watchdog timer	Programmable via software 1 to 255 second	Programmable via software 1 to 255 second	Programmable via software 1 to 255 second	Programmable via software 1 to 255 second	Programmable via software 1 to 255 second	Programmable via software 1 to 255 second	Programmable via software 1 to 255 second	Programmable via software 1 to 255 second	

# Product Listing

								
	<b>KMDA-6921</b>	<b>KMDA-7610</b>	<b>KMDA-7920</b>	<b>KMDA-7921</b>	<b>KMDA-2630-S</b>	<b>KMDA-2630-T</b>	<b>KMDA-3301</b>	<b>KMDA-3302</b>
<b>Processor</b>								
CPU	Intel® Comet lake 10th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1200 CPU H420E Chipset	Intel® Alder lake-S 12th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® H610 PCH	Intel® Alder lake-S 12th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® H610 PCH	Intel® Alder lake-S 12th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® H610 PCH	Intel® Elkhart lake SoC CPU: Celeron J6412/Celeron N6210	Intel® Elkhart lake SoC CPU: Celeron J6412/Celeron N6210	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU	Intel® Tiger lake U Soc CPU (core i3-1115G4/i5-1135G7/i7-1165G7, Celeron 6305E),
RAM	2*260-Pin ,DDR4,2933MHz, 64GB Max.	2*262-Pin, DDR5,4800MHz, 64GB max.	2*262-Pin, DDR5,4800MHz, 64GB max.	2*262-Pin, DDR5,4800MHz, 64GB max.	1*DDR4 SO-DIMM , 3200MHz, 32GB max.	1*DDR4 SO-DIMM , 3200MHz, 32GB max.	2*DDR4 SO-DIMM, 3200MHz, 64GB max.	1*DDR4 SO-DIMM, 3200MHz, 32GB max.
Graphics	Intel UHD Graphics, Supports DirectX12, OpenGL 4.5; DP:4096*2304@60Hz, VGA:1900*1200@60Hz, HDMI: 4096*2160@30Hz(2 independent display)	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0 DP:8K@60Hz,HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent display	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0 DP:8K@60Hz,HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent display	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0 DP:8K@60Hz,HDMI:4096*2160@60Hz, VGA:1920*1200@60Hz, 3 independent display	Intel Gen11 UHD Graphics, HDMI2.0: 4096*2304@60Hz VGA: 1920*1200@60Hz	Intel Gen11 UHD Graphics, HDMI2.0: 4096*2304@60Hz VGA: 1920*1200@60Hz	Intel UHD Graphics or iRIS® Xe Graphics , Supports Intel DL technology, DirectX12.1, OpenGL 4.6 and OpenCL 2.0 HDMI 2.0 : 4096x2304@60Hz, DP 1.4 : 7680x4320@60Hz	Intel UHD Graphics / Iris® Xe Graphics , DirectX12.1, OpenGL 4.6 and OpenCL 3.0 HDMI 2.0 : 4096x2304@60Hz
<b>I/O Port</b>								
LAN	1*Intel I226V, PCIe X1, 10M-2.5G, WOL; 1*Intel I219 LM, 10M-1000M, WOL	1*Intel I226V, 10-1000M, WOL; 1*Intel I219 LM, 10-1000M, WOL	1*Intel I226V, 10-1000M, WOL; 1*Intel I219 LM, 10-1000M, WOL	1*Intel I226V, 10-1000M, WOL; 1*Intel I219 LM, 10-1000M, WOL	2*Intel I226V, 10M-2.5G, WOL; 2*Realtek 8111H, 10-1000M	2*Intel I226V, 10M-2.5G, WOL;	3*Intel I225V, 10M-2.5G, iAMT 13.0	2*Intel I210AT, 10M-1000M, WOL
USB	4* USB3.2 Gen1, 2*USB2.0, 2*USB2.0(Build-in) 2* USB3.2(10G),2*USB3.2(5G),2*USB2.0	2* USB3.2(10G),2*USB3.2(5G),2*USB2.0	2* USB3.2(10G),2*USB3.2(5G),2*USB2.0	2* USB3.2(10G),2*USB3.2(5G),2*USB2.0	2*USB3.2 Gen2, 6*USB2.0, 1*USB2.0(Build-in)	2*USB3.2 Gen2, 2*USB2.0, 1*USB2.0(Build-in)	2* USB3.2 Gen2, 2*USB2.0, 2*USB2.0(internal)	2* USB3.2 Gen2, 2*USB2.0
Display	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*DP+1*HDMI+1*VGA	1*HDMI+1*VGA	1*HDMI+1*VGA	1*DP+1*HDMI	1*HDMI
Audio	1*Line out+1* Mic, Realtek ALC 897	1*Line out+1* Mic, Realtek ALC 897	1*Line out+1* Mic, Realtek ALC 897	1*Line out+1* Mic, Realtek ALC 897	Audio out+1*Line in+1* Mic,Realtek ALC897	1*Line out,Realtek ALC897	1*Line out+1* Mic,Realtek ALC662VD	/
COM/Others	2*RS232/422/485, 2*RS232; 1*LPT, 1*PS/2	2*RS232/422/485, 2*RS232; 1*SM Bus	2*RS232/422/485, 2*RS232; 1*SM Bus	2*RS232/422/485, 2*RS232; 1*SM Bus	2*RS232/422/485, 2*RS232	2*RS232/422/485, 2*RS232	2*RS232/422/485; 1*MIO	1*RS232/422/485; 1*RS232
DIO	8-bit DIO,TTL 16-bit DIO(2*10 pin)	16 bit iso. DIO,8bit DI(PNP/NPN),8bit DO 16 bit iso. DIO(2*10pin)	16 bit iso. DIO,8bit DI(PNP/NPN),8bit DO 16 bit iso. DIO(2*10pin)	16 bit iso. DIO,8bit DI(PNP/NPN),8bit DO 16 bit iso. DIO(2*10pin)	8 bit DIO(DB9)	8 bit DIO(DB9)	8-bit DIO(2*5pin)	8bit DIO(2*5pin)
<b>Storage</b>								
Storage	2*2.5" SATA3, 6Gbps; 1*mSATA(SATA3.0 & USB2.0)	2*2.5" SATA3, 15mm; 1*mSATA(SATA3)	2*2.5" SATA3, 15mm; 1*mSATA(SATA3)	2*2.5" SATA3, 15mm; 1*mSATA(SATA3)	1*2.5" SATA3; 1*mSATA, AHCI	1*2.5" SATA3; 1*mSATA, AHCI	1*2.5" SATA3, 6Gbps; 1*mSATA, support AHCI; 1*M.2 2280 M-Key NVMe(PCIe4.0 X2)	2*mSATA;
<b>Expansion</b>								
Expansion Port	1*PCIe3.0 X16(X16)+ 1*PCIe3.0 X4(X2), 2*32-bit PCI; 1*Mini PCIe(PCIeX1/USB2.0+SIM), 4G LTE/PCIe;	1*Mini PCIe(PCIeX1/USB+SIM), 4G LTE/PCIe;	1*PCIe5.0X16(X16)+1*PCIe3.0X16(X4); or 1*PCIe5.0X16(X16)+1*32bit PCI; 1*Mini PCIe(PCIeX1/USB+SIM),4G LTE	1*PCIe5.0X16(X16)+1*PCIe3.0X4(X2)+ 2*32bit PCI; 1*Mini PCIe(PCIeX1/USB+SIM),4G LTE	1*M.2 B-key 3052(PCIe X1/USB2.0+SIM), 5G NR/4G LTE; 1*Full size Mini PCIe(PCIe X1)	1*M.2 B-key 3052(PCIe X1/USB2.0+SIM), 5G NR/4G LTE; 1*JHTECH Express-01 80pin:2*PCIeX1, 4*USB2.0, Front-Audio; 1*PS/2, Front-Panel, 1*Sm bus, 1*eSPI	1*Mini PCIe(PCIe X1+USB2.0), support Wifi/BT; 1*M.2 3052 B-Key(PCIe X1+USB2.0), with SIM slot, support 4G LTE/5G NR; 1*M.2 2280 M-Key , (PCIe4.0 X2), support high speed signal function card	1*Mini PCIe(PCIe X1/USB2.0), CAN2.0; 1*M.2 3042/3052 B-Key (PCIeX1/USB2.0+SIM),4G LTE/5G NR; 1*M.2 2230 E-Key (PCIeX1+USB2.0), Wifi/BT
<b>Power Supply</b>								
Input voltage	DC IN 9-36V ,with protection of short circuit, over voltage, over current	DC IN 9-36V 3-pin, with protection of short circuit, over voltage, over current;	DC IN 9-36V 3-pin, with protection of short circuit, over voltage, over current;	DC IN 9-36V 3-pin, with protection of short circuit, over voltage, over current;	DC 12V or DC 9-36V, short circuit protection, OVP&OCP	DC 12V or DC 9-36V, short circuit protection, OVP&OCP	DC 9-36V, 1*3-pin,with short circuit, over voltage & over current protection	DC IN 9-36V,OVP&OCP;
TDP	60W(i7-10700K /4G DDR4/256G SSD)	TDP: TBD	TDP: TBD	TDP: TBD				TBP
<b>Mechanical</b>								
Structure	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum chassis, SGCC	SGCC frame
Color	Silver white + Aquamarine	Silver white+Aquamarine	Silver white+Aquamarine	Silver white+Aquamarine	Silver white+Aquamarine	Silver white+Aquamarine	Blue+white	Silver gray
Installation	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting	desktop mounting/optional Din-Rail mounting	desktop mounting; (Opt.)-Din-Rail
Dimension	230*273*204mm	256.68*267.3*99mm	256.68*312.7*149.9mm	256.68*312.7*210.9mm	162*111.8*65mm	162*111.8*65mm	250*154*61.9mm	172*116*54mm
Net Weight	6.84KG	TBD	TBD	TBD	1.32KG	1.30KG	2.55KG	0.89KG
<b>Environmental</b>								
Operating Temp	-20°C~60°C,SSD,with air flow -10°C~55°C,HDD,with air flow	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C, SSD, with air flow	-20°C~60°C, SSD, with air flow	-20°C~65°C, SSD, with air flow	-20°C~60°C, SSD, with air flow
Storage Temp	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C
Storage Humidity	10~90%@40°C, No- condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~90%@40°C, non-condensing	10~90%@40°C, No- condensation
Vibration	5 grms/5~500Hz/random/operation (SSD); 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation (SSD); 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD); 1 grms/5~500Hz/random/operation (HDD)
Shock	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)
Certificate /EMC	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A
OS	Win11, Windows 10 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project (64-bit), Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 11, Windows 10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 10 64 bit, SUSE, Ubuntu, Wind River, Linux	Windows 10 64 bit, SUSE, Ubuntu, Wind River, Linux	Windows 11/10 IoT enterprise, Android, SUSE, Ubuntu, Wind River, RedHat Enterprise, Wind River VxWorks*7, Yocto
Watchdog timer	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second

# Product Listing



## KMDA-5611-S001

## KMDA-5611-S002

## KMDA-6611-S001

## KMDA-6611-S002

## KMDA-7611-S

## KMDA-7611-T

## SCC-3116

## ECC-U5000

	KMDA-5611-S001	KMDA-5611-S002	KMDA-6611-S001	KMDA-6611-S002	KMDA-7611-S	KMDA-7611-T	SCC-3116	ECC-U5000
<b>Processor</b>								
<b>CPU</b>	Intel® Coffee lake 9th/8th-Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1151 CPU, up to 65W, Intel® H310 PCH	Intel® Coffee lake 9th/8th-Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1151 CPU, up to 65W, Intel® H310 PCH	Intel® Comet lake 10th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1200 CPU, up to 65W, Intel® H420E PCH	Intel® Comet lake 10th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1200 CPU, up to 65W, Intel® H420E PCH	Intel® Alder lake-S/Raptor Lake-S 12/13th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU; H610 PCH	Intel® Alder lake-S/Raptor Lake-S 12/13th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU; H610 PCH	Intel® Baytrail-D Celeron J1900, frequency 2.0~2.42GHz, quad-core with 4 threads, 2M cache, 22nm, TDP 10W	Intel® Elkhart lake SoC CPU: Celeron J6412 2.0-2.6GHz
<b>RAM</b>	2*DDR4 SODIMM, 2666MHz, 64GB max.	2*DDR4 SODIMM, 2666MHz, 64GB max.	2*DDR4 SODIMM, 2933MHz, 64GB max.	2*DDR4 SODIMM, 2933MHz, 64GB max.	2*DDR5 SODIMM, 4800MHz, 64GB max.	2*DDR5 SODIMM, 4800MHz, 64GB max.	1*DDR3L, 1333MHz SODIMM, 8GB max.	1*DDR4, 3200MHz SODIMM, 32GB max.
<b>Graphics</b>	Intel® UHD Graphics, Supports DirectX 11.1, OpenGL 5.0, OpenCL 2.1; HDMI: 4096x2160@24Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, Supports DirectX 11.1, OpenGL 5.0, OpenCL 2.1; HDMI: 4096x2160@24Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5; HDMI: 4096x2160@30Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5; HDMI: 4096x2160@30Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0; HDMI: 4096x2160@60Hz,	Intel® UHD Graphics, Supports DirectX 12, OpenGL 4.5, OpenCL 3.0; HDMI: 4096x2160@60Hz,	Intel HD Graphics, OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264, Dual independent display, VGA: 1920*1200@60Hz, HDMI: 1920*1080@60Hz	Intel UHD Graphics / Iris® Xe Graphics, Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI: 4096*2304@60Hz
<b>I/O Port</b>								
<b>LAN</b>	1*Intel I210AT+1*I219LM, 10M-1000M, WOL; 4*Intel I210AT POE+, 10M-1000M, WOL	1*Intel I210AT+1*I219LM, 10M-1000M, WOL;	1*Intel I210AT+1*I219LM, 10M-1000M, WOL; 4*Intel I210AT POE+, 10M-1000M, WOL	1*Intel I210AT+1*I219LM, 10M-1000M, WOL;	3*Intel I210AT, 10M-1000M, WOL; 1*Intel I219LM, 10M-1000M, WOL	1*Intel I210AT, 10M-1000M, WOL; 1*Intel I219LM, 10M-1000M, WOL	3*Intel I210AT, 10-1000M	3*RTL811H-VB, 10-1000M
<b>USB</b>	2* USB3.1+ 2*USB2.0	2* USB3.1+ 2*USB2.0+8*USB3.0	2* USB3.2+ 2*USB2.0	2* USB3.1+ 2*USB2.0+8*USB3.0	2* USB3.2 Gen2, 2* USB3.2 Gen1	2* USB3.2 Gen2, 2* USB3.2 Gen1	1* USB3.0; 6*USB2.0	2* USB3.1; 2*USB2.0
<b>Display</b>	1*HDMI+1*VGA	1*HDMI+1*VGA	1*HDMI+1*VGA	1*HDMI+1*VGA	1*HDMI	1*HDMI	1*HDMI+1*VGA	1*HDMI
<b>Audio</b>	/	/	/	/	1*Line out+1*Mic, Realtek ALC897	/	1*Line out+1*Mic, Realtek ALC662VD	/
<b>COM/Others</b>	1*RS232/485; 1*RS232	1*RS232/485; 1*RS232	1*RS232/485; 1*RS232	1*RS232/485; 1*RS232	2*RS232/422/485; 4*RS232	2*RS232/422/485	4*RS232/422/485, 1*RS232; 1*PS/2	2*RS232/485, 6*RS485; 2*CAN
<b>DIO</b>	32 bit iso. DIO(2*18pin)	32 bit iso. DIO(2*18pin)	32 bit iso. DIO(2*18pin)	32 bit iso. DIO(2*18pin)	8 bit iso. DIO(2*5pin)	8 bit iso. DIO(2*5pin)	8bit DIO (DB9), TTL	8*DI+6*DO
<b>Storage</b>								
<b>Storage</b>	1*2.5"SATA3.0, 6Gbps; 1*mSATA, 6Gbps	1*2.5"SATA3.0, 6Gbps; 1*mSATA, 6Gbps	1*2.5"SATA3.0, 6Gbps; 1*mSATA, 6Gbps	1*2.5"SATA3.0, 6Gbps; 1*mSATA, 6Gbps	1*2.5"SATA3.0, 6Gbps; 1*mSATA, 6Gbps	1*mSATA, 6Gbps	1*2.5" SATA2,HDD/SSD; 1*mSATA, AHCI	1*mSATA, 6Gbps
<b>Expansion</b>								
<b>Expansion Port</b>	1*Mini PCIe(+SIM), 4G/WIFI/PCIe;	1*Mini PCIe(+SIM), 4G/WIFI/PCIe;	1*Mini PCIe(+SIM), 4G/WIFI/PCIe;	1*Mini PCIe(+SIM), 4G/WIFI/PCIe;	2*Mini PCIe(PCIe X1/USB2.0), PCIe module; 1*M.2 3052/3042 B-Key (PCIe X1/USB2.0+SIM), 5G NR;	2*Mini PCIe(PCIe X1/USB2.0), PCIe module; 1*M.2 3052/3042 B-Key (PCIe X1/USB2.0+SIM), 5G NR;	1*Mini PCIe(+SIM), 4G LTE/Wifi/BT;	1*Mini PCIe(+SIM), 4G LTE/Wifi/BT; 1*Mini PCIe(PCIeX1+USB2.0)
<b>Power Supply</b>								
<b>Input voltage</b>	DC 9-36V, with SCP,OVP,OCP;	DC 9-36V, with SCP,OVP,OCP;	DC 9-36V, with SCP,OVP,OCP;	DC 9-36V, with SCP,OVP,OCP;	DC 9-36V, with SCP,OVP,OCP;	DC 9-36V, with SCP,OVP,OCP;	DC IN 9-36V,OVP&OCP;	DC IN 12V/9-36V,OVP&OCP;
<b>TDP</b>	TBD	TBD	TBD	TBD	TBD:105.84W (Intel I3-12100/128GB SSD/32GB RAM)	TBD:105.84W (Intel I3-12100/128GB SSD/32GB RAM)	14.4W(2.5" HDD)	18.35W(Celeron J6412/2.00GHz, 8G DDR4, 128G mSATA)
<b>Mechanical</b>								
<b>Structure</b>	Aluminum-magnesium alloy, SGCC frame	Aluminum-magnesium alloy, SGCC frame	Aluminum-magnesium alloy, SGCC frame	Aluminum-magnesium alloy, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame	Aluminum Chassis, SGCC frame
<b>Color</b>	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray	Silver gray
<b>Installation</b>	Wall/Desktop/Din-Rail mounting	Wall/Desktop/Din-Rail mounting	Wall/Desktop/Din-Rail mounting	Wall/Desktop/Din-Rail mounting	desktop/Wall/Din-Rail mounting	desktop/Wall/Din-Rail mounting	desktop mounting	desktop mounting
<b>Dimension</b>	225*154*75.6mm	225*154*75.6mm	225*154*75.6mm	225*154*75.6mm	238*169*75.6mm	238*169*61.8mm	268*160*57.6mm	222*140*45mm
<b>Net Weight</b>	TBD	TBD	TBD	TBD	2.55KG	2.32KG	2.15KG	1.32KG
<b>Environmental</b>								
<b>Operating Temp</b>	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~60°C,SSD, with air flow; -10°C~55°C,HDD, with air flow;	-20°C~65°C,SSD,with air flow -10°C~55°C,HDD,with air flow -40°C~85°C	-20°C~60°C,SSD, with air flow -40°C~85°C
<b>Storage Temp</b>	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C
<b>Storage Humidity</b>	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~95%@40°C, No-condensation	10~90%@40°C, No-condensation	10~90%@40°C, No-condensation
<b>Vibration</b>	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)	5 grms/5~500Hz/random/operation (SSD) 1 grms/5~500Hz/random/operation (HDD)
<b>Shock</b>	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD) 20g peak acceleration(duration 11ms,HDD)
<b>Certificate/EMC</b>	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A
<b>OS</b>	Windows 10 Enterprise(/IoT,64bit) (CFL-R) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) (CFL-R) Wind River VxWorks 7 (CFL-R)	Windows 10 Enterprise(/IoT,64bit) (CFL-R) Ubuntu. SuSe. Redhat Enterprise 1,2 (Kernel 4.14) (CFL-R) Wind River VxWorks 7 (CFL-R)	Windows 11/10 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project (64-bit), Wind River VxWorks 7	Windows 11/10 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project (64-bit), Wind River VxWorks 7	Windows 11/10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 11/10 IoT Enterprise 2021 LTSC, Ubuntu, SuSe, Red Hat Enterprise, Wind River Linux, Wind River VxWorks 7	Windows 7, Windows 8.1, Windows 10, Linux Fedora Ubuntu	Windows 10, Linux
<b>Watchdog timer</b>	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second

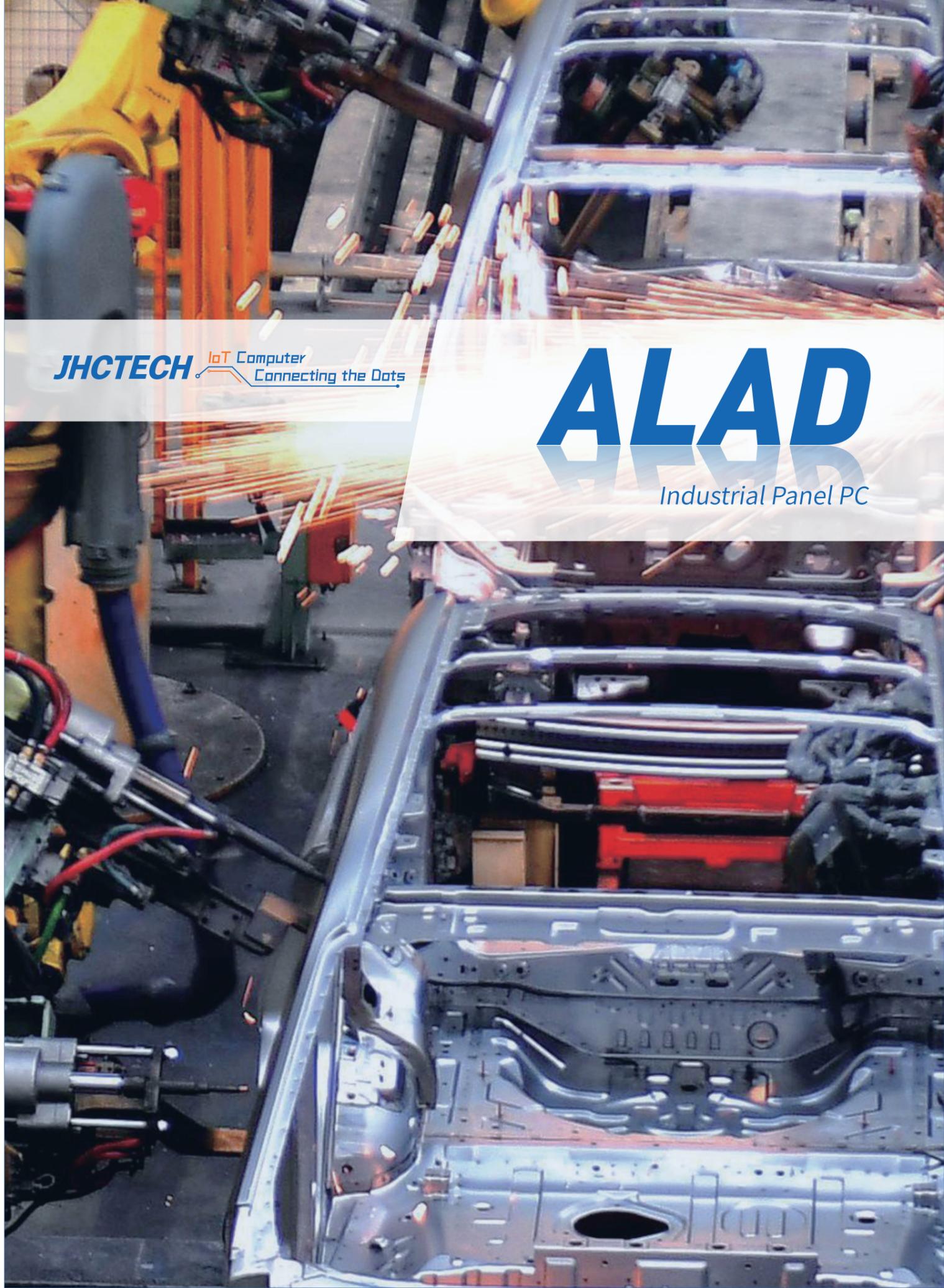


# ALAD

Industrial Panel PC

**New product and differences for ALAD tablets**

Model	CPU	Model	CPU	Model	CPU
A1010T/T(P)	Elkhart lake	K1020T	Sky lake-U/ Kaby lake-U	K1050T/T(P)	Tiger lake-U
A1210T/T(P)		K1220T		K1250T/T(P)	
A1510T(P)		K1520T		K1550T(P)	
A1710T/T(P)		K1720T		K1750T/T(P)	
A1810T(P)		K1820T(P)		K1850T(P)	
A1910T/T(P)		K1920T		K1950T/T(P)	
A2110T(P)		K2120T(P)		K2150T(P)	
A2310T(P)		K2320T(P)		K2350T(P)	



# Industrial Panel PC Product Listing

										
System	ALAD-K1050T(P)	ALAD-K1250T(P)	ALAD-K1550T(P)	ALAD-K1551T(P)	ALAD-K1750T(P)	ALAD-K1850T(P)	ALAD-K1950T(P)	ALAD-K2150T(P)	ALAD-K2350T(P)	
CPU	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	Intel® Tigerlake U Celeron/Core I3/I5/I7 CPU, ULT SoC, TDP 12W/15W	
RAM	1*DDR4, 3200Mhz SODIMM, 32GB max.									
Graphics	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz	Intel®UHD/ Intel® Iris® Xe Graphics: Intel DL boost, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI:4096*2304@60Hz
I/O Interfaces										
LAN	2*Intel I210AT, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	2*Intel I226V, 10M-1000M, WOL	
USB	4*USB3.2	4*USB3.2+1*USB2.0	4*USB3.2	4*USB3.2+1*USB2.0	4*USB3.2+1*USB2.0	4*USB3.2	4*USB3.2+1*USB2.0	4*USB3.2	4*USB3.2	
Display	1*HDMI									
Audio	1*Line out, Realtek ALC897									
Serial port	2*RS232/422/485	2*RS232/422/485+2*RS232	2*RS232/422/485	2*RS232/422/485+2*RS232	2*RS232/422/485+2*RS232	2*RS232/422/485+2*RS232	2*RS232/422/485+2*RS232	2*RS232/422/485+2*RS232	2*RS232/422/485+2*RS232	
LCD Display										
Dimensions	10.1" TFT LCD	12.1" TFT LCD	15.6" TFT LCD	15.0" TFT LCD	17.0" TFT LCD	18.5" TFT LCD	19.0" TFT LCD	21.5" TFT LCD	23.8" TFT LCD	
Resolution	1280*800	1280*800	1920*1080	1024*768	1280*1024	1366*768	1280*1024	1920*1080	1920*1080	
Max. colors	16.2M	16.2M	16.2M	16.2M	16.7M	16.7M	16.7M	16.7M	16.7M	
Luminance	350	500	350	350	350	300	470	300	350	
Viewing Angle	85°(L), 85°(R), 85°(U),85°(D)	80°(L), 80°(R), 70°(U),70°(D)	85°(L), 85°(R), 85°(U),85°(D)	80°(L), 80°(R), 80°(U),80°(D)	80°(L), 80°(R), 80°(U),80°(D)	85°(L), 85°(R), 85°(U),85°(D)	85°(L), 85°(R), 85°(U),85°(D)	89°(L), 89°(R), 89°(U),89°(D)	89°(L), 89°(R), 89°(U),89°(D)	
Touch screen										
Touch type	5-wire resistive touch screen/ projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	projected capacitive touch screen	projected capacitive touch screen	projected capacitive touch screen	
Transmittance	83%/≥85%	83%/90%	83%/90%	83%/90%	90%	83%/90%	90%	90%	90%	
Controller	USB									
Storage	1*2.5" SATA3.0 HDD/SSD, 1*mSATA									
Expansion	1*Mini PCIe(Pcie&USB),Pcie module; 1*M.2 3042/3052(+SIM), 4G LTE/5G NR	1*Mini PCIe(Pcie&USB),Pcie module; 1*M.2 3042/3052(+SIM), 4G LTE/5G NR	1*Mini PCIe(Pcie&USB),Pcie module; 1*M.2 3042/3052(+SIM), 4G LTE/5G NR Opt.1*PcieX4 (X4) /1*32bit PCI	1*Mini PCIe(Pcie&USB),Pcie module; 1*M.2 3042/3052(+SIM), 4G LTE/5G NR Opt.1*PcieX4 (X4) /1*32bit PCI	1*Mini PCIe(Pcie&USB),Pciemodule 1*M.2 3042/3052(+SIM), 4G /5G NR	1*Mini PCIe(Pcie&USB),Pcie module 1*M.2 3042/3052(+SIM), 4G/5G NR	1*Mini PCIe(Pcie&USB),Pcie module 1*M.2 3042/3052(+SIM), 4G /5G NR Opt.1*PcieX4 (X4) /1*32bit PCI	1*Mini PCIe(Pcie&USB),Pcie module 1*M.2 3042/3052(+SIM), 4G /5G NR Opt.1*PcieX4 (X4) /1*32bit PCI	1*Mini PCIe(Pcie&USB),Pcie module 1*M.2 3042/3052(+SIM), 4G /5G NR Opt.1*PcieX4 (X4) /1*32bit PCI	1*Mini PCIe(Pcie&USB),Pcie module 1*M.2 3042/3052(+SIM), 4G /5G NR Opt.1*PcieX4 (X4) /1*32bit PCI
Power Supply										
Input voltage & TDP	DC IN 9~36V; 34.5W (CPU i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (CPU i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (CPU i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (CPU i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (i7-1165G7, 8G DDR4, 128G SSD)	DC IN 9~36V; 11.5W (i7-1165G7, 8G DDR4, 128G SSD)	
Mechanical										
Sturcture	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	Aluminum die-casting front bezel , fin-shaped radiator shell	
Dimension (W*H*D)	275*193*51mm Panel mounting opening size(W*H): 270*188mm	315*259*51mm Panel mounting opening size(W*H): 303*247mm	416*265*59mm Panel mounting opening size(W*H): 403*251mm	380*315*56mm Panel mounting opening size(W*H): 368*303mm	415.5*360.5*59mm Panel mounting opening size(W*H): 407*352mm	482*305*59mm Panel mounting opening size(W*H): 474*396mm	453.5*388.5*64mm Panel mounting opening size(W*H): 445*380mm	546.9*344.7*64mm Panel mounting opening size(W*H): 538*335mm	594*375*64mm Panel mounting opening size(W*H): 583*364mm	
Mounting	Panel/VESA 100*100/75*75mm	Panel/VESA 100*100/75*75mm	Panel/VESA 100*100/75*75mm	Panel/Rack/VESA 100*100/75*75mm	Panel/Rack/VESA 100*100/75*75mm	Panel/VESA 100*100/75*75mm	Panel/Rack/VESA 100*100/75*75mm	Panel/VESA 100*100/75*75mm	Panel/VESA 100*100/75*75mm	
Net Weight	1.85KG	2.8KG	3.7KG	4.3KG	6.1KG	6.63KG	6.9KG	8.15KG	7.74KG	
Environmental										
Operating Temp.	0~ 50°C, HDD( -10 ~ 55°C, SSD),airflow	0~ 50°C, HDD( -10~55°C, SSD),airflow	0~ 50°C, HDD( -10~55°C, SSD),airflow	0~ 50°C, HDD( -10~55°C, SSD), airflow	0~ 50°C, HDD( -10~55°C, SSD), airflow	0~ 50°C, HDD( -10~55°C, SSD), airflow				
Storage Temp.	-20°C~60°C									
Storage Humidity	10~95%@40°C, non-condensing									
Vibration	1g 5~500Hz,with HDD									
Shock	10g peak acceleration (duration 11ms) with HDD									
EMC	CE,FCC Class A									
OS	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 11/10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto

									
	<b>WPPC-H1580T</b>	<b>WPPC-H1780T</b>	<b>ALAD-101T</b>	<b>ALAD-151T</b>	<b>ALAD-171T</b>	<b>ALAD-181T(P)</b>	<b>ALAD-191T</b>	<b>ALAD-211T(P)</b>	
<b>System</b>	Intel® Baytrail Celeron J1900 2.0-2.42G CPU	Intel® Baytrail Celeron J1900 2.0-2.42G CPU							
<b>CPU</b>	Intel® Baytrail Celeron J1900 2.0-2.42G CPU	Intel® Baytrail Celeron J1900 2.0-2.42G CPU							
<b>RAM</b>	1*DDR3L,1333Mhz SODIMM,Max.8GB	1*DDR3L,1333Mhz SODIMM, Max.8GB							
<b>Graphics</b>	Gen.7 Intel® HD Graphics LCD+HDMI+VGA display,OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264 VGA:1920*1200@60Hz; HDMI:1920*1080@60Hz	Gen.7 Intel® HD Graphics LCD+HDMI+VGA display,OpenGL 3.2, DirectX 11, OpenCL 1.2, MPGE2/H.264 VGA:1920*1200@60Hz; HDMI:1920*1080@60Hz							
<b>I/O Interfaces</b>	2*Intel I211AT, Gigabit	2*Intel I211AT, Gigabit							
<b>LAN</b>	2*Intel I211AT, Gigabit	2*Intel I211AT, Gigabit							
<b>USB</b>	1*USB3.0, 3*USB2.0	1*USB3.0, 3*USB2.0							
<b>Display</b>	1*HDMI+1*VGA	1*HDMI+1*VGA							
<b>Audio</b>	Optional audio	Optional audio							
<b>Serial port</b>	2*RS232/422/485	2*RS232/422/485							
<b>LCD Display</b>			<b>LCD Display</b>						
<b>Dimensions</b>	15" TFT LED	17" TFT LED	<b>Dimension</b>	10.1" TFT LED	15" TFT LED	17" TFT LED	18.5" TFT LED	19" TFT LED	
<b>Resolution</b>	1024*768	1280*1024	<b>Resolution</b>	1280*800	1024*768	1280*1024	1366*768	1280*1024	
<b>Max. colors</b>	16.2M	16.2M	<b>Max. colors</b>	16.7M	16.2M	16.2M	16.7M	16.7M	
<b>Luminance</b>	350	600	<b>Max. Luminance</b>	350	350	600	300	470	
<b>Viewing Angle</b>	80°(left), 80°(right), 80°(up), 80°(down)	80°(left), 80°(right), 70°(up), 80°(down)	<b>Viewing Angle</b>	85°(left), 85°(right), 85°(up), 85°(down)	80°(left), 80°(right), 80°(up), 80°(down)	80°(left), 80°(right), 70°(up), 80°(down)	89°(left), 89°(right), 85°(up), 85°(down)	85°(left), 85°(right), 75°(up), 85°(down)	
<b>Touch screen</b>			<b>Backlight life</b>	15000 hours/50000 hours	50000 hours	70000 hours	50000 hours	50000 hours	
<b>Touch type</b>	5-wire resistive touch screen/ projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	<b>Touch type</b>	5-wire resistive touch screen/ projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	Projected capacitive touch screen	5-wire resistive touch screen/ projected capacitive touch screen	
<b>Transmission</b>	83/90%	83/90%	<b>Light Transmission</b>	80%/90%	83%/90%	80%/90%	90%	83%/90%	
<b>Controller</b>	USB	USB	<b>Controller</b>	USB/USB	USB/USB,RS232	USB/USB	USB/RS232	USB/USB	
<b>Storage</b>			<b>I/O Port</b>						
<b>Storage</b>	1*2.5" SATA swappable, 1*mSATA, support AHCI	1*2.5" SATA swappable, 1*mSATA Full-height card, support AHCI	<b>OSD menu/language</b>	AUTO/Power/Menu/Source/UP (LEFT)/DOWN(RIGHT) Chinese, English, German, French, Russian, Italian, Spanish, Arabic and other optional languages	AUTO/Power/Menu/Source/UP (LEFT)/DOWN(RIGHT) Chinese, English, German, French, Russian, Italian, Spanish, Arabic and other optional languages	AUTO/Power/Menu/Source/UP (LEFT)/DOWN(RIGHT) Chinese, English, German, French, Russian, Italian, Spanish, Arabic and other optional languages			
<b>Expansion</b>			<b>Display</b>	1*VGA+1*HDMI/1*DP (choose one)	1*VGA+1*HDMI/1*DP (choose one)	1*VGA+1*HDMI/1*DP (choose one)	1*VGA+1*HDMI/1*DP (choose one)	1*VGA+1*HDMI/1*DP (choose one)	
<b>Expansion Port</b>	1*Mini PCIe, with SIM slot	1*Mini PCIe, with SIM slot	<b>Audio</b>	1*Line in, 2*2W power speaker	1*Line in, 2*3W power speaker	1*Line in, 2*3W power speaker	1*Line in, 2*3W power speaker	1*Line in, 2*3W power speaker	
<b>Power Supply</b>			<b>Touch interface</b>	1*RS232 Touch, 1*USB Touch	1*RS232 Touch, 1*USB Touch	1*RS232 Touch, 1*USB Touch	1*RS232 Touch, 1*USB Touch	1*RS232 Touch, 1*USB Touch	
<b>Input voltage &amp; TDP</b>	DC IN 9~36V, D-Jack w/M8, Power consumption: 19.5W	DC IN 9~36V, D-Jack w/M8, Power consumption: 30W	<b>Power Input</b>	DC 10-30V	DC 10-30V	DC 10-30V	DC 10-30V	DC 10-30V	
<b>Mechanical</b>			<b>TDP</b>	12V@0.65A (No Power output)	12V@0.65A (No Power output)	12V@1.6A (No Power output)	12V@1.6A (No Power output)	12V@1.6A (No Power output)	
<b>Structure</b>	SUS304 stainless steel/5052 Aluminum alloy/SECC	SUS304 stainless steel/5052 Aluminum alloy/SECC	<b>Standby power consumption</b>	Standby power consumption <1W	Standby power consumption <1W	Standby power consumption <1W	Standby power consumption <1W	Standby power consumption <1W	
<b>Dimension (W*H*D)</b>	405.22*328.22*52.1mm	429.51*364.51*52.1mm	<b>Mechanical</b>						
<b>Installation</b>	Desktop mounting VESA(100mm*100mm)	Desktop mounting VESA(100mm*100mm)	<b>Structure</b>	Aluminum alloy die-casting, flat panel, cooling fin case	Aluminum alloy die-casting, flat panel, cooling fin case	Aluminum alloy die-casting, flat panel, cooling fin case	Aluminum alloy die-casting, flat panel, cooling fin case	Aluminum alloy die-casting, flat panel, cooling fin case	
<b>Net Weight</b>	5.8KG	5.57KG	<b>Dimension (W*H*D)</b>	275*193*51mm Panel mounting opening size(W*H): 271*189mm	380*315*56mm Panel mounting opening size (W*H): 367.3*303.3mm	415.5*360.5*59mm Panel mounting opening size (W*H): 407*352mm	482.3*304.3*59.1mm Panel mounting opening size (W*H): 473.8*295.8mm	453.5*388.5*64.1mm Panel mounting opening size (W*H): 445*380mm	
<b>Environmental</b>			<b>Net Weight</b>	1.8kg	4.3kg	TBD	6.6kg	TBD	
<b>Operating Temperature</b>	0~ 60°C	0~ 60°C	<b>Installation</b>	Panel mounting, VESA (75*75mm)	Panel mounting, VESA (100*100/75*75mm)	Panel mounting, VESA (100*100mm)	Panel mounting, VESA (100*100/75*75mm)	Panel mounting, VESA (100*100/75*75mm)	
<b>Storage Temperature</b>	-40°C~85°C	-40°C~85°C	<b>Environmental</b>						
<b>Storage Humidity</b>	10~90%@40°C, No- condensation	10~90%@40°C, No- condensation	<b>Operating Temp</b>	-20~70°C, with air flow	0~50°C, with air flow	0~50°C, with air flow	0~50°C, with air flow	0~60°C, with air flow	
<b>Vibration</b>	1g 5~500Hz	1g 5~500Hz	<b>Storage Temp</b>	-40~80°C	-20~60°C	-20~60°C	-20~60°C	-40~80°C	
<b>Shock</b>	10g peak acceleration (duration 11ms) with HDD	10g peak acceleration (duration 11ms) with HDD	<b>Humidity</b>	10~95%@40°C, No- condensation	10~95%@40°C, No- condensation	10~95%@40°C, No- condensation	10~95%@40°C, No- condensation	10~95%@40°C, No- condensation	
<b>EMC</b>	CE,FCC Class A	CE,FCC Class A	<b>Vibration</b>	1g 5~500Hz	1g 5~500Hz	1g 5~500Hz	1g 5~500Hz	1g 5~500Hz	
<b>OS</b>	Windows 7,Windows 8.1, Windows 10, Linux Fedora Ubuntu	Windows 7,Windows 8.1, Windows 10, Linux Fedora Ubuntu	<b>Shock</b>	10g peak acceleration(duration 11ms)	10g peak acceleration(duration 11ms)	10g peak acceleration(duration 11ms)	10g peak acceleration(duration 11ms)	10g peak acceleration(duration 11ms)	
			<b>Certificate</b>	CE,FCC Class A	CE,FCC Class A	CE,FCC Class A	CE,FCC Class A	CE,FCC Class A	

### Optional function module

#### ECB-246&ECD-2460



PC interface	Mini PCIe,52Pin
Ethernet	2*Intel I210AT,10-1000M
Operating Temp	0°C~70°C
Dimension	30*50.9*6.0mm (ECB-246) 51*27*18mm (ECD-2460)

#### ECB-260 CANBus



PC interface	Mini PCIe,52Pin
CAN interface	2*DB9
Application	FCANBus
CAN standard	CAN2.0A/CAN2.0B,ISO/DIS 11898-1/2/3
Protocol support	VehicleDBC, CANopen, J1939
Operating Temp	-40°C~85°C
Dimension	50.95*30*1.6mm

#### OFX-075



Input	DC IN 9-36V
Output	DC OUT 12V
TDP	54W~78W(max.)
Operating Temp	0°C~60°C
Dimension	53*38mm



**JHCTECH** IoT Computer  
Connecting the Dots

# SIGM

Embedded In-vehicle Computer-SIGM

# Product Listing



## SIGM-2650

## SIGM-2660

## SIGM-2661

## SIGM-3250

## SIGM-3251

## SIGM-U1350

## SIGM-U3550

## SIGM-U3555

### System

<b>CPU</b>	Intel® Apollo lake E3940 CPU, 4C4T, up to 1.8GHz, 2 MB L2, TDP 9.5W	Intel® Elkhart lake Celeron J6412 CPU, 4C4T, 2.0-2.6GHz	Intel® Elkhart lake Celeron J6412 CPU, 4C4T, 2.0-2.6GHz	Intel® Skylake/Kabylake-U CPU i3/i7 2C4T
<b>RAM</b>	1*DDR3L, 1866MHz, onboard 4GB+1*SODIMM, 8GB max.	1*DDR4, 3200MHz, 32GB max.	1*DDR4, 3200MHz, 32GB max.	DDR4, 2133MHz, onboard 4/8GB+1*SODIMM, 16GB max.
<b>Graphics</b>	Intel® UHD Graphics, DP: 4096*2160@60Hz, Smart Display: 1920*1200@60Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, LVDS: 1900*1200@60Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, LVDS: 1900*1200@60Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, DP: 4096*2304@60Hz, Smart Display: 1920*1200@60Hz, VGA: 1920*1200@60Hz

### I/O

<b>LAN</b>	2*I210AT, 10-1000M, M12(with POE), 802.3af(15.4W)	2*RTL8111H, 10-1000M	2*RTL8111H, 10-1000M	6*I210AT,10-1000M, M12(4/6 POE), 802.3af(15.4W)
<b>USB</b>	2* USB3.0+ 1*USB2.0 + 2*USB2.0 (M12)	4* USB3.1+ 2*USB2.0	4* USB3.1+ 2*USB2.0	2* USB3.0+ 1*USB2.0 + 2*USB2.0 (M12)
<b>Display</b>	1*DP+1*VGA+1*Smart Display	1*LVDS+3*VGA	1*LVDS+3*VGA	1*DP+1*VGA+1*Smart Display
<b>Audio</b>	Opt.Realtek ALC662VD, Audio out and MIC	Opt.Realtek ALC897, Audio out and MIC	Opt.Realtek ALC897, Audio out and MIC	Opt.Realtek ALC662VD, Audio out and MIC
<b>Serial port</b>	1*RS232(DB9), 1*RS485(DB9), Opt.2*CAN 2.0(DB9)	2*RS232/422/485(DB9), 10*RS232(DB9)	2*RS232/422/485(DB9), 12*RS232(DB9)	1*RS232(DB9), 1*RS485(DB9), Opt. 2*CAN 2.0(DB9)
<b>DIO</b>	4-ch input/4-ch output (DB9)	/	/	4-ch input/4-ch output (DB9)

### Storage

<b>Storage</b>	1*2.5" HDD SATA; 1*mSATA(SATA+USB)	1*2.5" HDD SATA; 1*CFast	1*2.5" HDD SATA; 1*mSATA	1*2.5" HDD SATA; 1*mSATA(SATA+USB)
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### Expansion

<b>Expansion</b>	2*Mini PCIe(+SIM),4G LTE/Wifi/BT/GPS 1*Mini PCIe(USB), Opt. mSATA 1*Mini PCIe(USB)	1*Mini PCIe,WIFI/PCIe module	1*Mini PCIe,PCIe module	2*Mini PCIe(+SIM),4G LTE/Wifi/BT/GPS 1*Mini PCIe(USB), Opt. mSATA 1*Mini PCIe(USB)
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### Power Supply

<b>Input voltage &amp; TDP</b>	DC 9~36V, 5-pin M12 (S001) Opt.DC 48/72/110V(Railway), 4-pin M12 (S002) TDP: 20.4W (E3940 CPU, 4G DDR3L, 128G SSD)	DC 9~36V, 3-pin TDP: 10W	DC 9~36V, 3-pin TDP: TBD	DC 48/72/110V(Railway), 4-pin M12(S00X) DC 9~36V, 5-pin M12 (T00X) TDP: 28W (I5-6200U, 8GB)
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### Mechanical

<b>Structure</b>	Aluminum chassis, SGCC frame	Aluminum chassis, SGCC frame	Aluminum chassis, SGCC frame	Aluminum chassis, stainless steel frame
<b>Dimension (W*H*D)</b>	250*154*72mm	247*151*94.8mm	287*151*114.8mm	270*154*64.5mm
<b>Net weight</b>	3.10KG	3.0KG	TBD	3.2KG

### Environmental

<b>Operating temperature</b>	EN50155 TX: -40~70°C (Operating10min in 85°C)	-25~60°C with airflow	-25~60°C with airflow	EN50155 TX: -40~70°C (Operating10min in 85°C)
<b>Storage temperature</b>	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C
<b>Storage humidity</b>	10~90%@40°C, non-condensing	10~95%@40°C, non-condensing	10~95%@40°C, non-condensing	10~90%@40°C, non-condensing
<b>Vibration</b>	MIL-STD-801G, EN50155	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	MIL-STD-801G, EN50155
<b>Shock</b>	MIL-STD-801G, EN50155	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20gpeak acceleration(duration 11ms,HDD)	MIL-STD-801G, EN50155
<b>Certification /EMC</b>	EN50155/ E-Mark/ CE/FCC Class A	EN50155/ E-Mark/ CE/FCC Class A	CE/FCC Class A	EN50155/ E-Mark/ CE/FCC Class A

**OS** Windows 10, Linux, Wind River VxWorks

WIN10/Win11 64 bit,SUSE,Ubuntu, Wind River,Linux

WIN10/Win11 64 bit,SUSE,Ubuntu, Wind River,Linux

Windows 7, Windows 10, Linux Fedora Ubuntu

### System

<b>CPU</b>	Intel® Skylake/Kabylake-U CPU i3/i7 2C4T, MLU220 8TOPS(INT8),TDP8.5W	Intel® Skylake/Kabylake-U Corei3/i5/i7 CPU;Opt. MLU220T MXM 16TOPS(INT8)	Intel Coffee lake-H Core I3/I5/I7/Xeon CPU, TDP 25W/45W	Intel® Comet lake 10th-Gen Celeron/Pentium/Core™ i9/i7/i5/i3 CPU, Intel® Q470 PCH
<b>RAM</b>	DDR4, 2133MHz, onboard 4/8GB+1*LPDDR4 4GB, 16GB max.	Onboard 4GB +1*SODIMM, 4+16GB max.	Onboard 8GB+ 1*SODIMM, 8+32GB max.	2*DDR4 SO-DIMM, 2933MHz, 64GB max.
<b>Graphics</b>	Intel® UHD Graphics, DP: 4096*2304@60Hz, VGA: 1920*1200@60Hz	Intel® UHD Graphics, DP:4096*2160@60Hz, Smart Display:1920*1200@60Hz, VGA:1920*1200@60Hz	Intel UHD Graphics, DirectX11.1, OpenGL 5.0 and OpenCL 2.1 ; DP:4096*2304@60Hz, HDMI:4096*2160@24Hz,	Intel® UHD Graphics, DirectX 12, OpenGL 4.5, 2*HDMI 1.4: 4096 x 2304@24Hz

### I/O

<b>LAN</b>	4*I210AT,10-1000M, 4*M12, 1*I210IS, 1*SFP	2*Intel® I210AT 10M-1000M (M12)	1*Intel I210AT(IT)+1*Intel I219LM(2*RJ45) 2*Intel I210AT(IT)[2*M12]; 3*Intel I210AT(IT)	3*Intel I226V, 10M-2.5G, iAMT 13.0,vPro 8*Intel I210AT(8*M12)
<b>USB</b>	3*USB3.0+ 1*USB2.0+ 2*USB2.0 (M12)	2* USB3.0+ 1*USB2.0 + 2*USB2.0 (M12)	2* USB3.1+ 8*USB2.0	4* USB3.2(10G)+2*USB3.0+2*USB2.0
<b>Display</b>	1*DP+1*VGA	1*DP+1*VGA+1*Smart Display	1*DP+1*HDMI	2*HDMI
<b>Audio</b>	Opt.Realtek ALC662VD, Audio out and MIC	/	/	(Opt.)Realtek ALC, 1*Line out+1*Mic
<b>Serial port</b>	1*RS232/RS422/RS485,DB9, 2*RS232,DB9, 1* RS232/485,DB9	1*Console RS232 (RJ45)	1*RS232/RS485 (DB9)	2*RS232/422/485+2*RS485
<b>DIO</b>	8-bit DIO, programmable TTL signal	/	/	8-bit DIO, TTL

### Storage

<b>Storage</b>	1*2.5" HDD SATA; 1*mSATA(SATA+USB)	1*2.5" HDD SATA; 1*mSATA(SATA+USB)	4*2.5" HDD SATA bay(RAID0/1/5/10); 1*mSATA	1*2.5" HDD SATA3.0(RAID0/1); 1*M.2 2280 M-Key(PCIe4), NVMe
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### Expansion

<b>Expansion</b>	2*Mini PCIe(+SIM),4G LTE/Wifi/BT/GPS 1*Mini PCIe(USB), Opt. mSATA 1*Mini PCIe(USB)	2*Mini PCIe(+SIM), 4G/GSM/Wifi/BT/GPS 1*Mini PCIe(SATA+USB), mSATA 1*Mini PCIe(PCIe X1/USB)	Slot7&8: 1*PCIe3.0X8(CPU)+1*USB3.1+ 1*USB2.0+1*G-LAN S6:1*PCIeX4+1*USB3.1+1*USB2.0+1*G-LAN S5:1*PCIeX4+1*USB3.1+1*USB2.0 S3&4: 1*PCIeX1+SATA3.0+1*USB2.0 S1&2: 1*SATA3.0+1*USB2.0 S9: 2*PCIeX8+2*PCIeX4+2*PCIeX1+ 4*USB3.1+4*SATA3.0+8*USB2.0+3*G-LAN	1*M.2 2230 E-key(PCIeX1/USB2.0/CNVio), WiFi6/BT5.0; 1*M.2 3052 B-key(PCIeX1/USB2.0+SIM), 5G NR/4G LTE; 1*M.2 Type 2280 M-Key(PCIe4), NVME/PCIe Module
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### Power Supply

<b>Input voltage &amp; TDP</b>	DC 9~36V(Railway), 4-pin (M12), TDP: 38W (I5-6500U CPU/8G DDR4)	Railway:DC 110V(43-160V), 4-pin M12; 28W(Non. MLU220T); 44.5W(with MLU220T)	DC 16.6-160V(Railway,4-pin M12) TDP: TBD	DC 110V(Rail-way, ±40%),OVP&OCP, 250W TDP: 110W(I7-10700 CPU)
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### Mechanical

<b>Structure</b>	Aluminum chassis, stainless steel frame	Aluminum chassis, stainless steel frame	Aluminum alloy mold, conductive oxidation process	Aluminum-magnesium alloy, SGCC frame
<b>Dimension (W*H*D)</b>	270*154*82.4mm	430*44.5*283mm	482.6*248.2*133mm(w kit), 435.8*208.5*133mm(n kit)	374*246*85mm(w kit), 342*222*85mm(n kit)
<b>Net weight</b>	3.93KG	4.69KG	TBD	7.76KG

### Environmental

<b>Operating temperature</b>	EN50155 TX: -40~70°C	EN50155 TX: -40~70°C	EN50155 QT3: -25~70°C(25W CPU); QT1: -25~55°C(45W)	EN50155 QT1: -25~55°C(35W CPU)
<b>Storage temperature</b>	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C
<b>Storage humidity</b>	10~90%@40°C, non-condensing	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation
<b>Vibration</b>	MIL-STD-810G, EN50155	MIL-STD-810G, EN50155	MIL-STD-810G, EN50155:2021	MIL-STD-810G, EN50155:2021
<b>Shock</b>	MIL-STD-810G, EN50155	MIL-STD-810G, EN50155	MIL-STD-810G, EN50155:2021	MIL-STD-810G, EN50155:2021
<b>Certification /EMC</b>	EN50155, CE/FCC Class A	EN50155: 2017/E-Mark/CE/FCC/Class A	EN50155: 2021 / CE/FCC Class A	EN50155: 2021 / CE/FCC Class A

**OS** Linux Fedora Ubuntu

Linux,Windows7(SKL-U32/64;KBL-U64), Windows 10 64bit(Windows does not support MLU220)

Windows 10/11 Enterprise & IOT Enterprise, Ubuntu, SUSE, Redhat Enterprise, VxWorks

Windows 10/11 IoT Enterprise (64), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux, Yocto Project(64), Wind River VxWorks 7



## ICS-2010

## ICS-2020

## ICS-4010

## ICS-4040

System	ICS-2010	ICS-2020	ICS-4010	ICS-4040
<b>CPU</b>	1/2 Intel Xeon Gen2 scalable processors, Intel® C621 PCH	1/2 Intel Xeon Gen4 scalable processors, Intel® C741 PCH	1/2 Intel Xeon Gen2 scalable processors, Intel® C621 PCH	1/2 Intel Xeon Gen4 scalable processors, Intel® C741 PCH
<b>RAM</b>	16*DDR4,2933MHz ECC LRDIMM/RDIMM LRDIMM:4T (16*256GB); RDIMM:2T (16*128GB)	16*DDR5,2933MHz ECC LRDIMM/RDIMM LRDIMM/RDIMM:4T (16*256GB)	16*DDR4,2933MHz ECC LRDIMM/RDIMM LRDIMM:4T (16*256GB); RDIMM:2T (16*128GB)	16*DDR5,5600MHz,3DS RDIMM/RDIMM 4T max.(16*256GB)
<b>Graphics</b>	VGA:1920*1200@60Hz,	VGA:1920*1200@60Hz,	VGA:1920*1200@60Hz,	VGA:1920*1200@60Hz,
<b>I/O</b>				
<b>LAN</b>	2*Intel I210AT 10M-1000M; 1*IPMI2.0, Aspeed AST2500 BMC	2*Broadcom BCM5720 1GBase-T; 1*IPMI2.0, Aspeed AST2600 BMC	2*Intel I210AT 10M-1000M; 1*IPMI2.0, Aspeed AST2500 BMC	2*Intel I210AT 10M-1000M; 1*IPMI2.0, Aspeed AST2500 BMC
<b>USB</b>	4* USB3.0+2*USB2.0	6* USB3.0	4* USB3.0+ 2*USB2.0	6* USB3.0
<b>Display</b>	1*VGA	1*VGA	1*VGA	1*VGA
<b>Audio</b>	/	/	/	/
<b>Serial port</b>	1*RS232(DB9)	1*RS232 (DB9)	1*RS232 (DB9)	1*RS232 (DB9)
<b>DIO</b>	/	/	/	/
<b>Storage</b>				
<b>Storage</b>	2*2.5" SAS/SATA3.0,RAID0,1	2*2.5" SAS/SATA3.0,RAID0,1	8*2.5"/3.5" SAS/SATA, RAID0/1/5/10; 2*2.5" SAS/SATA	8*2.5"/3.5" SAS/SATA, RAID0/1/5/10; 2*2.5" SAS/SATA
<b>Expansion</b>				
<b>Expansion Port</b>	2*PCIe3.0X16+1*PCIe3.0X8; 1*M.2 22110/2280 M-Key (PCIe3.0X4) , 1*M.2 2280 M-Key (PCIe3.0X4)	2*PCIe5.0X16+1*PCIe5.0X8; 2*M.2 22110/2280 M-Key(PCIe4.0X2); 3*MCI0X8(6*PCIe5.0X4 NVMe)	6*PCIe3.0X16+1*PCIe3.0X8(X4); 1*M.2 22110/2280 M-Key(PCIe3.0X4)	6*PCIe5.0X16+1*PCIe5.0X8; 2*M.2 22110/2280 M-Key(PCIe4.0X4); 3*MCI0(PCIe5.0X8,6*NVMe)
<b>Power Supply</b>				
<b>Input voltage &amp; TDP</b>	550W/800W/1200W/1600W; 1+1 hot swap redundant power supply	550W/800W/1200W/1600W; 1+1 hot swap redundant power supply	550W/800W/1200W/1600W/2000W/2200W; 1+1 hot swap redundant power supply	550W/800W/1200W/1600W/2000W/2200W; 1+1 hot swap redundant power supply
<b>Mechanical</b>				
<b>Structure</b>	Imported SGCC hot dip galvanized steel sheet,19-inch rack 2U standard	Imported SGCC hot dip galvanized steel sheet,19-inch rack 2U standard	Imported SGCC fingerprint resistant galvanized steel, 19-inch rack 4U standard	Imported SGCC fingerprint resistant galvanized steel, 19-inch rack 4U standard
<b>Dimension (W*H*D)</b>	442*447*87mm	442*447*87mm	645*445*176.5mm	645*445*176.5mm
<b>Net weight</b>	TBD	TBD	18KG	18KG
<b>Environmental</b>				
<b>Operating temp.</b>	0~50°C	10~35°C	0~60°C	5~35°C
<b>Storage temp.</b>	-20°C~75°C	-40°C~70°C	-20°C~75°C	-40°C~65°C
<b>Storage humidity</b>	5~95%@40°C, Non-condensation	5~95%@40°C, Non-condensation	5~95%@40°C, Non-condensation	5~95%@40°C, Non-condensation
<b>Vibration</b>	TBD	TBD	TBD	TBD
<b>Shock</b>	TBD	TBD	TBD	TBD
<b>Certification /EMC</b>	CCC/CE/FCC Class A	CCC/CE/FCC Class A	CCC/CE/FCC Class A	CCC/CE/FCC Class A
<b>OS</b>	Windows Server 2012/2008 R2(64-bit) , Windows SBS 2011(64-bit), Red Hat Enterprise Linux Server(32/64-bit), Suse Enterprise Linux Server(32/64-bit), Ubuntu Server(32/64-bit)	Windows Server 2012/2008 R2(64-bit) , Windows SBS 2011(64-bit), Red Hat Enterprise Linux Server(32/64-bit), Suse Enterprise Linux Server(32/64-bit), Ubuntu Server(32/64-bit)	Windows Server 2012/2008 R2(64-bit) , Windows SBS 2011(64-bit), Red Hat Enterprise Linux Server(32/64-bit), Suse Enterprise Linux Server(32/64-bit), Ubuntu Server(32/64-bit)	Windows Server, Hyper-V Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, CentOS, Ubuntu, Oracle Linux, VMware ESXi, Citrix XenServer

**JHCTECH** IoT Computer  
Connecting the Dots

# NODE&SBC

NODE Core Module & Single Board Computer

								
	<b>NODE-I912</b>	<b>NODE-I719</b>	<b>NODE-I914</b>	<b>NODE-I973</b>	<b>EPI-I908</b>	<b>ECM-I718</b>	<b>ECM-I910</b>	<b>ECM-I913</b>
<b>Formfactor</b>	INE Type F	NODE Type	NODE Type	NODE Type	<b>System</b>			
<b>CPU</b>	<b>Intel® Tiger lake U SoC CPU:</b> i7-1165G7, 4C8T, 2.8~4.7GHz/28W; i5-1135G7, 4C8T, 2.4~4.2GHz/28W; i3-1115G4, 2C4T, 3.0~4.1GHz/28W; Celeron 6305E, 2C2T, 1.8GHz/15W;	<b>Intel Elkhart lake Soc CPU:</b> Celeron J6412, 4C4T, 2.0-2.6GHz/10W Celeron N6210, 2C2T, 1.2-2.6GHz/6.5W	<b>Intel® Tiger lake U SoC CPU:</b> i7-1165G7, 4C8T, 2.8~4.7GHz/28W; i5-1135G7, 4C8T, 2.4~4.2GHz/28W; i3-1115G4, 2C4T, 3.0~4.1GHz/28W; Celeron 6305E, 2C2T, 1.8GHz/15W;	<b>Intel® Comet lake-S CPU:</b> Core i9/i7/i5/i3/Celeron	<b>CPU</b> Intel® Skylake/Kabylake-U processor Celeron/Core i3/i5/i7	Intel® Elkhart lake SoC CPU: Celeron J6412 2.0-2.6GHz/ Celeron N6210 1.2-2.6GHz	Intel® Whiskey lake U Celeron/Core i3/i5/i7	Intel® Tiger lake U Soc CPU (Core i3-1115G4/i5-1135G7/i7-1165G7, Celeron 6305)
<b>DRAM</b>	Dual-channel DDR4 2*260-pin SO-DIMM, up to 3200MHz, 64GB max.	Single channel DDR4 1*260-pin SO-DIMM, up to 3200MHz, 32GB max.	Single channel DDR4 1*260-pin SO-DIMM, up to 3200MHz, 32GB max.	Dual-channel DDR4 2*260-pin SO-DIMM, up to 2933MHz, 64GB max.	<b>RAM</b> 1*DDR4,2133MHz,SODIMM, 16GB max.	1*DDR4 SODIMM,3200MHz, 32GB max.	2*DDR4 SODIMM,2400MHz, 32GB max.	2*DDR4 SODIMM,3200MHz, 64GB max.
<b>Graphics</b>	Intel UHD Graphics or Iris® Xe Graphics, Supports Intel® Deep Learning Boost, DirectX12.1,OpenGL 4.6 and OpenCL 2.0; HDMI 2.0: 4096x2304@60Hz, DP 1.4: 7680x4320@60Hz, eDP: 4096x2304@60Hz	Intel® UHD Graphics, DirectX12.1, OpenGL and OpenCL; DP1.4 : 4096*2160@60Hz, eDP: 4096*2160@60Hz	Intel Iris® Xe Graphics, DirectX12.1, OpenGL 4.6 and OpenCL 3.0; HDMI 2.0: 4096x2304@60Hz, DP 1.4: 7680x4320@60Hz, eDP: 4096x2304@60Hz	Intel® UHD Graphics 630, DirectX 12, OpenGL 4.5 and OpenCL 2.1; HDMI:4096*2160@30Hz, DP:4096*2304@60Hz, eDP:4096*2304@60Hz	<b>Graphics</b> Intel® Gen. 9 HD Graphics;HDMI & 48-Bit LVDS Dual display, support Intel HD video & wireless display technology; HDMI:3840*2160@30Hz, LVDS :1920*1200@60Hz	Intel® Gen.10 UHD Graphics, HEVC/H265 HW; HDMI : 4096*2304@60Hz, DP :4096*2160@60Hz, LVDS : 1920*1200@60Hz	Intel® Gen. 9 UHD Graphics,Support 3*4K independent display,DirectX 12,HEVC/H265 HW HD codec, highest dynamic frequency is up to 1.2GHz; HDMI :4096*2304@24Hz, DP :4096*2304@60Hz,eDP:4096x2304@60Hz	Intel UHD Graphics or X® Graphics , Supports Intel DL boost,DirectX12.1,OpenGL 4.6 and OpenCL 3.0,HDMI:4096*2304@60Hz, DP:7680*4320@60Hz, LVDS:1920*1200@60Hz,3 independent display
<b>Connector 1</b>	eSPI and Fusa PCIe Gen3 X1*4/X4*1 PCIe Gen3 or USB3.2 X2*1 COM 1 USB2.0 3 SATA 1 DDI 1 GPIO Up to 15 channels F-Panel: Power SW/Reset/PW-LED/HDD-LED	<b>MXM 3.1 Goldfinger(281-Pin)</b> DDI 2 eDP 1 USB3.1 4 USB2.0 10 PCIe3.0 X1*4 PCIe3.0 X2*1	<b>MXM 3.1 Goldfinger(281-Pin)</b> DDI 2 eDP 1 USB3.2 4 USB2.0 10 PCIe3.0 X1*4 PCIe3.0 X2*1 PCIe3.0 X4*1	<b>MXM 3.1 Goldfinger(281-Pin)</b> DDI 2 eDP 1 USB3.2 6 USB2.0 10 PCIe3.0 X1*5 PCIe3.0 X2*1	<b>LAN</b> 2*Intel® I210AT/I211AT, 10-1000 M	2*Realtek 8111H, 10-1000M,WOL	1*Intel® I226V, 10-1000M, 1*Intel® I219LM,10-1000M	1*Intel® I226V, 10-1000M, 1*Intel® I219LM,10-1000M,iAMT13.0
<b>Connector 2</b>	PCIe3.0 X1*1 PCIe3.0 or USB3.1 X2*1 CPU PCIe Gen4 X1*2 HDA 1 USB2.0 5 SATA 1 DDI 1 COM 2 GPIO Up to 30 channels	SATA(PcieX1) 2 eSPI 1 HDA 1 SM BUS 1 Legacy IO 1 RTC 1 UART 4 GPIO 3 F-Panel: Power SW/Reset/PW-LED/HDD-LED	SATA(PcieX1) 2 LPC(eSPI) 1 HDA 1 SM BUS 1 Legacy IO 1 RTC 1 UART 4 GPIO 3 F-Panel: Power SW/Reset/PW-LED/HDD-LED	SATA(PcieX1) 4 LPC(eSPI) 1 HDA 1 SM BUS 1 Legacy IO 1 RTC 1 UART 3 GPIO 3 F-Panel: Power SW/Reset/PW-LED/HDD-LED	<b>Display</b> 1*HDMI+1*LVDS(pin) 1*Line out+1*Mic, Realtek ALC662,1*Amplifier	1*HDMI+1*DP+1*LVDS(pin) 1*Line in+1*Line out+1*Mic, Realtek ALC897	1*HDMI(1.4)+1*DP(1.2)+1*eDP(pin) 1*Line in+1*Line out+1*Mic, Realtek ALC897	1*HDMI+1*DP+1*LVDS(pin) 1*Line in+1*Line out+1*Mic, Realtek ALC897
<b>Power&amp; TDP</b>	DC IN 12V; TDP-up:28W(Celeron 6305E--15W)	DC IN 12V;	DC IN 12V;	DC IN 12V;	<b>Serial port &amp; Others</b> 2*RS232/422/485,2*RS232(pin); 2 channel power amplifier output; 1*SM Bus wafer; 1*Capacitive touch screen interface, 1*Resistive touch screen interface	1* RS232/422/485(pin),3*RS232(pin)	2* RS232/422/485(pin),2*RS232(pin)	2* RS232/422/485(pin),2*RS232(pin)
<b>Dimension</b>	133*95*16.6mm	95*82*6.4mm	95*82*6.4mm	150*100*13mm	<b>DIO</b> 8-bit DIO,programmable TTL	8-bit DIO,programmable TTL	8-bit DIO,programmable TTL	8-bit DIO,programmable TTL
<b>Operating temp.</b>	0~60°C(Standard); -40~85°C(Extend)	0~60°C	0~60°C	0~60°C	<b>Storage</b> 2*SATA3 6.0Gbps; 1*mSATA,support AHCI	1*SATA 3.0 HDD/SSD; 1*mSATA	1*SATA 3.0 HDD/SSD,1*mSATA(optional)	1*SATA 3.0 HDD/SSD; 1*mSATA(Optional)
<b>Storage temp.</b>	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	<b>Expansion</b> 1*MiniPCIe(PcieX1/USB+SIM), 4G/LTE/GSM/Wifi/BT/GPS; 1*80pin EIO:LPC. SM Bus.2*PcieX1	1*M.2 2230 E-key,WiFi5/BT5.0, or 1*M.2 3052 B-key(+SIM),4G LTE/5G NR;	1*M.2 2230 E-key,WiFi/BT5.0; 1*Mini PCIe(+SIM),4G LTE/PCIe module (BIOS to mSATA)	1*Mini PCIe(PcieX1),PCIe module/mSATA; 1*M.2 2230 E-key,WiFi/BT5.0, or 1*M.2 3052 B-key(+SIM),4G LTE/5G NR;
<b>Storage Humidity</b>	10~95%@40°C, Non-condensing	10~95%@40°C, Non-condensing	10~95%@40°C, Non-condensing	10~95%@40°C, Non-condensing	<b>Power Supply</b> DC 9~36V, 3-pin terminal; 45W(I7-7500U, 4GB, 64GB SSD, 1TB HDD)	DC 12V; or OFX-075 75W:DC IN 9-36V; 15.6W (J6412/32G DDR4/128 SSD)	DC 12V; or OFX-075 75W: DC IN 9-36V; 19.92W (I5-8265U, 8GB DDR , 500G SSD)	DC 12V; or OFX-075 75W:DC IN 9-36V; 45.36W (i7-1165 G7/4G DDR4/128G SSD)
<b>EMC/Certification</b>	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	<b>Environment</b> 190*115mm (Height: 27.4mm, PCB: 1.6mm)	146*102mm(Height: radiator with fan 37mm, fanless radiator 52mm, PCB:1.6mm)	146*102mm(Height: radiator with fan 37mm, fanless radiator 52mm, PCB:1.6mm)	146*102mm(Height: radiator with fan 37mm, fanless radiator 52mm; PCB:1.6mm)
<b>Watchdog Timer</b>	Watchdog timeout programmable via software 1 to 255 second	Watchdog timeout programmable via software 1 to 255 second	Watchdog timeout programmable via software 1 to 255 second	Watchdog timeout programmable via software 1 to 255 second	<b>Operating temp.</b> 0~60°C	0~60°C	0~60°C	0~60°C
<b>OS Support</b>	Windows 10/Windows 11 64 bit, SUSE, Ubuntu, Wind River, Linux	Windows 10/Windows 11 64 bit, SUSE, Ubuntu, Wind River, Linux	Windows 10/Windows 11 64 bit, SUSE, Ubuntu, Wind River, Linux	Windows 10/Windows 11 64 bit, SUSE, Ubuntu, Wind River, Linux	<b>Storage temp.</b> -40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C
					<b>Storage humidity</b> 10~95%@40°C, No condensation	10~95%@40°C, No-condensation	10~95%@40°C, No condensation	10~95%@40°C, No-condensation
					<b>Certification</b> CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A
					<b>Watchdog timer</b> programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second
					<b>OS</b> Windows 7, Windows 10, Linux Fedora Ubuntu (Note: The seventh generation Intel® Kabylake-U processor does not support Windows 7)	Windows 10/Windows 11 64 bit, SUSE, Ubuntu, Wind River, Linux	Windows 10 IoT enterprise, Andriod, Ubuntu, Suse, Red Hat enterprise, Wind River Vxworks 7, Yocto	Windows 11*IoT enterprise, Windows 10*IoT enterprise,Android,SUSE,Ubuntu, Wind River,Red Hat*Enterprise,Wind River VxWorks*7,Yocto

								
	<b>PITX-I915</b>	<b>MATX-I953</b>	<b>MATX-I961</b>	<b>MATX-I964</b>	<b>ATX-I971</b>	<b>ATX-I980</b>	<b>MITX-I984</b>	<b>PADR-M101</b>
<b>System</b>								
<b>CPU</b>	Intel® Tiger lake U Soc CPU (Core i3-1115G4/i5-1135G7/i7-1165G7, Celeron 6305E)	Intel® 6th/7th Gen Core i7/i5/i3/Pentium/Celeron LGA1151 CPU, 91W	Intel® Xeon® E or 9th/8th-Gen Pentium/Celeron/Core i7/i5/i3 LGA1151 CPU	Intel 8/9th Gen. Core i9/i7/i5/i3/Pentium/Celeron CPU,LGA 1151 Socket,max.95W	Intel 10th Gen Cometlake-S Core i9/i7/i5/i3/ Pentium/Celeron CPU, LGA 1200 Socket,125W	Intel 12th Gen. Alder lake-S Core i9/i7/i5/i3/ Pentium/Celeron CPU,LGA 1700 Socket,125W max.	Intel® 12th/13th Alder lake-S/Raptor lake-S LGA1700 processor CPU, Intel® H610, 65W max.	Intel® Whiskey lake-U CPU, Core I7-8565U,Core I5-8265U,Core I3-8145U,Celeron 4305U
<b>RAM</b>	LPDDR4x Onboard memory, 16GB max.	2*DDR4 UDIMM,2133MHz, 32GB max.	4*DDR4 2666/2400MHz, 128GB max.	2* DDR4 288-Pin Non-ECC UDIMM, 2666MHz, 64GB max.	2* DDR4 288-Pin Non-ECC UDIMM, 2933MHz, 64GB max.	4* DDR4 288-Pin Non-ECC UDIMM, 3200MHz, 128GB max.	2* DDR5 262-Pin Non-ECC SODIMM, 4800/5600MHz, 96GB max.	2*DDR4, 2400MHz, 32GB max.
<b>Graphics</b>	Intel UHD Graphics or iRIS® Xe Graphics , Supports Intel Deep Learning boost, DirectX12.1,OpenGL 4.6 and OpenCL 3.0, HDMI: 4096*2304@60Hz, eDP: 4096*2304@60Hz, 2 independent displays	Intel 9th HD Graphics, Direct3D 11.2,OpenGL 5.0, OpenCL 2.1; HDMI: 3840*2160@30Hz VGA: 1920*1200@60Hz DVI-D:1920 x 1200 @ 60Hz	Intel UHD Graphics, Supports DirectX11.1, OpenGL 5.0, OpenCL 2.1 DP: 4096*2304@60Hz, HDMI: 3840*2160@30Hz, 3 independent displays	Intel 9th HD Graphic, Supports Direct3D 11.2,OpenGL 5.0, OpenCL 2.1; HDMI:4096*2304@24Hz, VGA:1920*1200@60Hz, DVI-D:1920*1200@60Hz, 2 independent Display	Intel UHD Graphics, Supports DirectX12, OpenGL 4.5, OpenCL 2.1, HDMI:4096*2160@30Hz, VGA:1920*1200@60Hz	Intel Xe 700 UHD Graphics , DirectX 12, OpenGL 4.5, OpenCL 2.1; HDMI:4096*2160@60Hz,VGA:1920*1200@60Hz DP:7680*4320@60Hz	Intel® UHD Graphics 770 , DirectX 12, OpenGL 4.5, OpenCL 3.0; HDMI:4096*2160@60Hz, eDP:4096*2160@60Hz LVDS:1920*1200@60Hz	Intel® Gen. 9 UHD Graphics, HDMI:4096*2304@24Hz, DP:4096*2304@60Hz,2 independent Display
<b>I/O</b>								
<b>LAN</b>	1*Intel® I210AT, 10-1000M; 1*Intel® I219LM, 10-1000M	1* Intel® I210AT/I211AT,10-1000M Intel® I219LM,10-1000M,iVpro	2*Intel I210AT/I211AT,10-1000M; 1*Intel I219LM,10-1000M,iVpro	1*Intel® I226V, 10M-2.5G,WOL 1*Intel® I219LM,10-1000M,WOL	1*Intel® I226V, 10M-2.5G; 1*Intel® I219LM, 10-1000M,iVpro	1*Intel® I226V, 10-1000M,WOL; 1*Intel® I219LM, 10-1000M,iAMT13.0,vPro	1*Intel® I226V, 10-1000M,WOL; 1*Intel® I219LM, 10-1000M,WOL	4*USB3.1 Gen1(5Gbps) 1*DP+1*HDMI 1*Line out+1*Mic,Realtek ALC897
<b>USB</b>	2*USB3.2, 2*USB2.0 (built-in)	4*USB3.0, 2*USB2.0, 4*USB3.0(optional) 2*USB2.0 pin,1*USB2.0(built-in)	4*USB3.1, 4*USB2.0, 2*USB3.1(pin),1*USB2.0(Built-in)	4*USB3.2(5Gbps), 2*USB2.0, 4*USB2.0(pin)	4*USB3.2(5G), 4*USB2.0, 3*USB2.0(pin)	4*USB3.2(10G), 4*USB2.0 2*USB3.2(10G,pin), 3*USB2.0(pin)	4*USB3.2(10G), 2*USB2.0 2*USB2.0(pin)	2*RS232/422/485, 1*RS232
<b>Display</b>	1*HDMI+1*eDP	1*HDMI + 1*VGA+ 1*DVI-D	2*DP+1*HDMI	1*HDMI+1*VGA+1*DVI-D	1*HDMI+1*VGA	1*HDMI+1*DP+1*VGA	2*HDMI+1*eDP+1*LVDS	8bit DIO(OptionalRS232)programmable
<b>Audio</b>	1*Line in+1*Line out+1*Mic, Realtek ALC897	1*Line in+1*Line out+1*Mic, Realtek ALC897,1*Amplifier(optional)	1*Line in+1*Line out+1*Mic, Realtek ALC897	1*Line in+1*Line out+1*Mic, Realtek ALC897,1*Amplifier(Optional)	1*Line in+1*Line out+1*Mic, Realtek ALC897,1*Amplifier(Optional)	1*Line out+1*Mic,Realtek ALC897, Optional Amplifier	1*Line out+1*Mic,Realtek ALC897, 1*Amplifier	1*2.5" SATA,15mm
<b>Serial port &amp; Others</b>	1* RS232/422/485, 1*RS232	S001: 2*RS232/422/485, 4*RS232; S002: 2*RS232,10*RS232; 1*LPT, 1*LPC	4*RS232(pin); 1*PS/2(pin), 1*SM bus	1*RS232/422/485(DB9) 1*RS232/422/485(pin),4*RS232(pin); 1*PS/2(pin),1*SM bus,1*LPC	2* RS232/422/485, 4*RS232(pin); 1*LPT , 1*PS/2(pin)	1* RS232/422/485, 5* RS232(pin);	2* RS232/422/485(DB9)+2*RS232(pin)	
<b>DIO</b>	/	8-bit DIO,programmable TTL	8-bit DIO,Programmable TTL	8-bit DIO,programmable TTL	8-bit DIO,programmable TTL	8-bit DIO,programmable TTL	8-bit DIO,programmable TTL	
<b>Storage</b>								
<b>storage</b>	1*SATA 3.0, 6.0Gbps; 1*mSATA (Opt.)	4*SATA 3.0 HDD/SSD(1*SATA with power, support SATA DOM)	4*SATA3, HDD/SSD support RAID 0/1/5/10 1*M.2 2280 M-key(PCIe X4), NVMe	4*SATA3, HDD/SSD(1*5V SATA DOM); 1*M.2 2280/2242 M-key(PCIe X2), NVMe	4*SATA3, HDD/SSD	4*SATA3.0, RAID 0/1/10/5 1*M.2 2280 M-Key(PCIe4.0X4)	2*SATA3.0; 1*mSATA(SATA/PCIe)	1*Mini PCIe(+SIM),4G LTE/Wifi/BT; 1*M.2 E-Key,Wifi/BT
<b>Expansion</b>								
<b>Expansion</b>	1*Mini PCIe(PCIeX1),PCIe module/mSATA; 1*M.2 2230 E-key, WiFi5/BT5.0,	1*PCIeX16(X16); 2*PCIeX4(X1), 1*Mini PCIe, 1* 32-bit PCI	1*Mini PCIe(+SIM); 2*PCIe X16(1*X16/2*X8), 2*PCIe X8(Gen3, 2*X4)	1*PCIe3.0 X16(X16) , 2*PCIe2.0X4 (X1), 1*32-bit PCI; 1*M.2 2242/2280 M-Key(Gen2,PCIe X2)	1*PCIeX16; 3*PCIeX4(X2+X1+X1 / 1*PCIeX4); 3* 32-bit PCI	2*PCIe 5.0 X16 (X8)+ 2*PCIe 4.0 X4 (X4)+ 2*PCIe 3.0 X4(X4+X1)+ 1*32-bit PCI 1*M.2 2280 M-Key(PCIe4.0X4)	1*PCIe 5.0 X16 (X16)+ 1*M.2 3042/3052 B-Key(PCIe3.0X1/USB2.0+SIM), 5G NR/4G LTE + 1*M.2 2230 M-Key,Wifi/BT	DC 12V/DC 9~36V; 27.9W(I7-8565U,16GB DDR,1*4T SSD)
<b>Power Supply</b>								
<b>Power&amp; TDP</b>	DC 12V; TDP: 39.208W (i7-1165G7@2.8G)	24-Pin ATX+4-Pin ATX 12V 125W (i7-7700K/16G DDR4/128G SSD)	24-pin ATX/8-pin ATX 12V; 374W (I7-8700, 16GB DDR , 2*4TB, GTX-1660)	24-pin ATX+4-pin ATX 12V; 224W (I9-9900K /16G DDR4/128G SSD)	24-Pin ATX/8-Pin ATX 12V, Max. out put power: 280W	24-Pin ATX+8-Pin ATX 12V 110W(I7-12700K CPU/16G D4/128G SSD)	DC in 12V TDP:TBD	SGCC Silk Grey+Pastel Blue desktop mounting 200*140*67.5mm 1.51KG
<b>Environment</b>								
<b>Dimension (W*H)</b>	100*72mm	244*244mm (Height :34.9mm,PCB: 1.6mm)	244*244mm (Height:30.8mm, PCB: 1.6mm)	244*244mm (Height:33.2mm, PCB: 1.6mm)	305*244mm (Height: 37.58mm, PCB: 1.6mm)	305*244mm (Height: 34.9mm, PCB: 1.6mm)	170*170mm (Height: 33.2mm, PCB: 1.6mm)	
<b>Operating temp.</b>	0~60°C	0~60°C	0~60°C	0~60°C	0~60°C	0~60°C	0~60°C	
<b>Storage temp.</b>	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	
<b>Storage humidity</b>	10~95%@40°C, Non condensation	10~95%@40°C, Non condensation	10~95%@40°C, Non condensation	10~95%@40°C, Non condensation	10~95%@40°C, Non condensation	10~95%@40°C, Non condensation	10~95%@40°C, Non condensation	0°C~50°C,SSD,with air flow;
<b>Certification /EMC</b>	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	-40°C~85°C
<b>Watchdog timer</b>	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	10~95%@40°C, Non-condensation
<b>OS</b>	Windows 11*IoT enterprise, Windows 10*IoT enterprise, Android, SUSE, Ubuntu, Wind River, Red Hat*Enterprise, Wind River VxWorks*7, Yocto	Windows 7(SKL-S:32bit/64bit, KBL-S:64bit), Windows 10, Linux	Windows 10 Enterprise & IOT Enterprise Windows Server 2016 (Intel® Xeon® E) Ubuntu,SuSe,Redhat Enterprise 1,2 Wind River VxWorks 7	Windows7, Windows 10 Enterprise & IOT Enterprise (64 bit)(CFL-R); Windows* Server 2016 (Intel® Xeon® E) Ubuntu*, SuSe*; Redhat Enterprise* 1,2 (Kernel 4.14) (CFL-R) Wind River* ;VxWorks* 7 (CFL-R)	Windows 10, Windows 11, Linux Ubuntu	Windows 10/11 IoT Enterprise (64-bit), Windows Server 2019, Ubuntu, SUSE, Redhat Enterprise, Wind River Linux,Yocto Project (64-bit),Wind River VxWorks 7	Windows10/Windows11 IoT Enterprise 2021 LTSC; Ubuntu*, SuSe*, Redhat* Enterprise, WR Linux* 3; Yocto Project* BSP tool-based embedded Linux distribution; Celadon (Android*) in VM; Wind River VxWorks* 7	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD) 50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD) CE/FCC Class A
								Windows 10, SUSE, Ubuntu, Wind River, Red Hat Enterprise
								programmable via software 1 to 255 second

								
	<b>PADR-M102-718</b>	<b>PADR-M102-910</b>	<b>PADR-M102-913</b>	<b>PADR-S501-953</b>	<b>PADR-S501-961</b>	<b>PADR-S501-964</b>	<b>PADR-S501-971</b>	<b>PADR-S501-980</b>
<b>System</b>								
<b>CPU</b>	Intel® Elkhart lake SoC CPU: Celeron J6412 Celeron N6210	Intel® Whiskey lake-U CPU, Core I7-8565U,Core I5-8265U,Core I3-8145U,Celeron 4305U	Intel® Tiger lake U Soc CPU , core i3-1115G4/i5-1135G7/i7-1165G7, Celeron 6305,TDP 12W/15W/28W	Intel 6/7th Gen. SKL/KBL-S Core i7/i5/i3/ Pentium/Celeron LGA1151 CPU, up to 91W, H110 Chipset	Intel® 8/9th Gen. Coffee-S Core i9/i7/i5/i3 LGA1151 CPU,up to 95W,Q370 Chipset	Intel® 8/9th Gen. Coffee-S Core i9/i7/i5/i3 LGA1151 CPU,up to 95W,H310 Chipset	Intel 10th Gen. Cometlake-S Core i9/i7/i5/i3/Pentium/Celeron LGA1200 CPU,up to 125W, H420E Chipset	Intel gen 12/13th Alderlake-S/Raptor Lake-S LGA1700 CPU; Q670 PCH
<b>RAM</b>	1*DDR4, 3200MHz, 32GB max.	2*DDR4, 2400MHz, 32GB max.	2*DDR4, 3200MHz, 64GB max.	2*288 pin DDR4, 2400MHz, 32GB max.	4*288 pin DDR4, 2666MHz, 128GB max.	2*288 pin DDR4, 2666MHz, 64GB max.	2*288 pin DDR4, 2933MHz, 64GB max.	2*288 pin DDR4, 2933MHz, 64GB max.
<b>Graphics</b>	Intel® Gen. 10 UHD Graphics, HDMI:4096*2304@60Hz, DP:4096*2160@60Hz,2 independent Display	Intel® Gen. 9 UHD Graphics, HDMI:4096*2304@24Hz, DP:4096*2304@60Hz,2 independent Display	Intel UHD Graphics/ Xe Graphics , Supports Intel DL boost,DirectX12.1, OpenGL 4.6 and OpenCL 3.0, HDMI:4096*2304@60Hz, DP:7680*4320@60Hz,2 independent Display	Intel HD Graphics, DirectX12, OpenGL 4.5; HDMI:4096*2304@24Hz, VGA:1920*1200@60Hz, DVI-D:1920*1200@60Hz	Intel® UHD Graphics,DirectX12,OpenGL 4.5; HDMI:4096*2304@24Hz, DP:4096*2304@60Hz,3 independent display	Intel® UHD Graphics,DirectX12,OpenGL 4.5; HDMI:4096*2304@24Hz, VGA:1920*1200@60Hz, DVI-D:1920*1200@60Hz	Intel® UHD Graphics,DirectX12,OpenGL4.5; HDMI:4096*2160@30Hz, VGA:1920*1200@60Hz	Intel® UHD Graphics,DirectX12,OpenGL4.5; HDMI:4096*2160@30Hz, VGA:1920*1200@60Hz
<b>I/O</b>								
<b>LAN</b>	2*Realtek 8111H,10-1000M,WOL	1*Intel I219LM,10-1000M,WOL; 1*Intel I226V,10-1000M,WOL	1*Intel I219LM,10-1000M,WOL,iAMT13.0; 1*Intel I226V,10-1000M,WOL	1*Intel I210AT/I211AT, 10-1000M,WOL; 1*Intel I219LM, 10-1000M,WOL	2*Intel I210AT/I211AT, 10-1000M,WOL; 1*Intel I219LM,10-1000M,WOL/AMT12.0/iVpro	1*Intel I226V, 10M-2.5G, WOL; 1*Intel I219LM, 10-1000M, WOL	1*Intel I226V, 10M-2.5G, WOL; 1*Intel I219LM, 10-1000M, WOL	1*Intel I226V, 10M-2.5G, WOL; 1*Intel I219LM, 10-1000M, WOL
<b>USB</b>	4*USB3.1	4*USB3.0(5G)	4*USB3.2	4*USB3.0(5Gbps), 5*USB2.0	4*USB3.1 Gen2(10Gbps), 7*USB2.0	4*USB3.1 Gen1(5Gbps), 5*USB2.0	4*USB3.2 Gen1(5Gbps), 5*USB2.0	4*USB3.2 Gen1(5Gbps), 5*USB2.0
<b>Display</b>	1*DP+1*HDMI	1*DP+1*HDMI	1*DP+1*HDMI	1*HDMI+1*VGA+1*DVI-D	2*DP+1*HDMI	1*HDMI+1*VGA+1*DVI-D	1*HDMI+1*VGA	1*HDMI+1*VGA
<b>Audio</b>	1*Line out+1*Mic,Realtek ALC897	1*Line out+1*Mic,Realtek ALC897	1*Line out+1*Mic,Realtek ALC897	1*Line out+1*Mic,Realtek ALC662VD/ALC897	1*Line out+1*Mic,Realtek ALC662VD	1*Line out+1*Mic,Realtek ALC897	1*Line out+1*Mic,Realtek ALC897	1*Line out+1*Mic,Realtek ALC897
<b>Serial port &amp; Others</b>	2*RS232/422/485, 1*RS232	2*RS232/422/485, 1*RS232	2*RS232/422/485, 1*RS232	2*RS232/422/485, 1*RS232	2*RS232/422/485	2*RS232/422/485, 1*RS232	2*RS232/422/485, 2*RS232	2*RS232/422/485, 2*RS232
<b>DIO</b>	8bit DIO(OptionalRS232)programmable	8bit DIO(OptionalRS232)programmable	8bit DIO(OptionalRS232)programmable	8bit DIO(pin),programmable	8bit DIO(pin),programmable	8bit DIO(pin),programmable	8bit DIO(pin),programmable	8bit DIO(pin),programmable
<b>Storage</b>								
<b>storage</b>	1*2.5" SATA,15mm; 1*mSATA	1*2.5" SATA,15mm; 1*mSATA(Optional)	1*2.5" SATA,15mm; 1*mSATA(Optional)	4xSATA3, 6.0Gbps , the box is designed with 4x3.5 "and 2x2.5" a set of anti-vibration hard disk bay, 1 ultrathin DVD driver bay	4xSATA3, 6.0Gbps , the box is designed with 4x3.5 "and 2x2.5" a set of anti-vibration hard disk bay, 1 ultrathin DVD driver bay	4xSATA3, 6.0Gbps , the box is designed with 4x3.5 "and 2x2.5" a set of anti-vibration hard disk bay, 1 ultrathin DVD driver bay	4xSATA3, 6.0Gbps , the box is designed with 4x3.5 "and 2x2.5" a set of anti-vibration hard disk bay, 1 ultrathin DVD driver bay	4xSATA3, 6.0Gbps , the box is designed with 4x3.5 "and 2x2.5" a set of anti-vibration hard disk bay, 1 ultrathin DVD driver bay
<b>Expansion</b>								
<b>Expansion</b>	1*M.2 2230 B-Key,Wifi5/BT5.0, or 1*M.2 3052 E-Key,4G LTE/5G NR	1*Mini PCIe(+SIM),4G LTE/Wifi/BT/mSATA; 1*M.2 2230 E-Key,Wifi/BT	1*Mini PCIe,PCIe module/mSATA; 1*M.2 2230 E-Key,Wifi5/BT5.0, or 1*M.2 3052 B-Key(+SIM),4G LTE/5G NR	1*PCIe3.0 X16(X16)+ 2*PCIe2.0 X4(X1)+1*32 bit PCI; 1*Mini PCIe(X1)	2*PCIe3.0 X16(1*X16 or 2*X8)+ 2*PCIe3.0 X8(X4)+1*32 bit PCI; 1*M.2 2280 M-Key(PCIe3.0X4) 1*Mini PCIe(X1,USB+SIM)	1*PCIe3.0 X16(X8)+ 2*PCIe2.0 X4(X1)+1*32 bit PCI; 1*M.2 2280/2242 M-Key(PCIe2.0 X2)	1*PCIe3.0 X16(X16)+ 3*PCIe3.0 X4(X2+1+1 or Bios X4)+ 3*32 bit PCI	1*PCIe3.0 X16(X16)+ 3*PCIe3.0 X4(X2+1+1 or Bios X4)+ 3*32 bit PCI
<b>Power Supply</b>								
<b>Power&amp; TDP</b>	DC 12V/DC 9~36V; TDP:TBD	DC 12V/DC 9~36V; 27.9W(I7-8565U,16GB DDR,1*4T SSD)	DC 12V/DC 9~36V; TDP:TBD	AC100-240V,Standard ATXPower 300W, Optional 500W/750W; TDP:TBD	AC100-240V,Standard ATXPower 300W, Optional 500W/750W/1000W; TDP:TBD	AC100-240V,Standard ATXPower 300W, Optional 500W/750W; 197.8W (I7-9900K/16G DDR4/256G SSD)	AC100-240V,Standard ATXPower 300W, Optional 500W/750W; 184.85W(I7-10700K/16G DDR4/256G SSD)	AC100-240V,Standard ATXPower 300W, Optional 500W/750W; 184.85W(I7-10700K/16G DDR4/256G SSD)
<b>Mechanical</b>								
<b>Structure</b>	SGCC	SGCC	SGCC	Door with lock, SGCC, metal mold molding	Door with lock, SGCC, metal mold molding	Door with lock, SGCC, metal mold molding	Door with lock, SGCC, metal mold molding	Door with lock, SGCC, metal mold molding
<b>Color</b>	Silk Grey+Pastel Blue	Silk Grey+Pastel Blue	Silk Grey+Pastel Blue	Granite grey	Granite grey	Granite grey	Granite grey	Granite grey
<b>Installation</b>	desktop mounting	desktop mounting	desktop mounting	Mounted on 19"rack, optional mounting rail set	Mounted on 19"rack, optional mounting rail set	Mounted on 19"rack, optional mounting rail set	Mounted on 19"rack, optional mounting rail set	Mounted on 19"rack, optional mounting rail set
<b>Dimension (W*H*D)</b>	204*148*70mm	204*148*70mm	204*148*70mm	430*470*173mm	430*470*173mm	430*470*173mm	430*470*173mm	430*470*173mm
<b>Weight</b>	1.55KG	1.55KG	1.55KG	14KG	14KG	14KG	14KG	14KG
<b>Environment</b>								
<b>Operating temp.</b>	0°C~50°C,SSD,with air flow;	0°C~50°C ,SSD,with air flow;	0°C~50°C,SSD,with air flow;	0°C~50°C	0°C~50°C	0°C~50°C	0°C~50°C	0°C~50°C
<b>Storage temp.</b>	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C	-40°C~85°C
<b>Storage humidity</b>	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation	10~95%@40°C, Non-condensation
<b>Vibration</b>	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)	5 grms/5~500Hz/random/operation(SSD); 1 grms/5~500Hz/random/operation(HDD)
<b>Shock</b>	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)	50g peak acceleration(duration 11ms,SSD); 20g peak acceleration(duration 11ms,HDD)
<b>Certification</b>	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A	CE/FCC Class A,3C	CE/FCC Class A, 3C	CE/FCC Class A, 3C	CE/FCC Class A, 3C	CE/FCC Class A, 3C
<b>OS</b>	Windows 10/Windows 11 64 bit, SUSE, Ubuntu, Wind River, Linux	Windows 11, Windows 10, SUSE, Ubuntu, Wind River, Red Hat Enterprise	Win 11/Win 10*IoT enterprise,Android,-SUSE,Ubuntu,Wind River,Red Hat*Enterprise,Wind River VxWorks*7,Yocto	Windows 7(SKL-S:32/64 bit,KBL-S:64 bit), Windows 10, Linux	Windows 10 Enterprise & IOT Enterprise(64) Windows Server 2016 (Intel® Xeon® E) Ubuntu. SuSe. Redhat Enterprise 1,2 Wind River VxWorks 7 (CFL-R)	Windows7, Windows 10 Enterprise & IOT Enterprise (64); Windows Server 2016 Ubuntu. SuSe; Redhat Enterprise 1,2 Wind River ;VxWorks 7	Windows 10, Windows 11, Linux Ubuntu	Windows 10, Windows 11, Linux Ubuntu
<b>Watchdog timer</b>	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second	programmable via software 1 to 255 second