

# Product Selection Guide



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			<b>SBC Embedded System</b>	DRPC-230-ULT5 DRPC-130-AL DRPC-120-BT	81			
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			<b>SBC Embedded System</b>	ECN-380-QM87 ECN-360A-ULT3 ECW-281B-BT	86			

# OS Support List (Windows/Linux)

System Chipset	CE 6.0	Embedded Compact 7 CE 7.0	Embedded Compact 2013	XP Pro	7	8.1	10 32 bit	10 64 bit	Server 2003	Server 2008	Server 2012	Server 2016	Server 2019	Linux Kernel
Coffee lake R	Intel® C246							V		V	V	V	V	Linux Kernel 4.19
	Intel® Q370							V						Linux Kernel 4.19
	Intel® H310							V						Linux Kernel 4.19
	Intel® CM246							V						Linux Kernel 4.19
	Intel® QM370							V						Linux Kernel 4.19
	Intel® HM370							V						Linux Kernel 4.19
Intel® whiskey lake ULT					V		V		V	V	V	V	Linux Kernel 4.19	
Coffee Lake	Intel® C246							V	V	V	V	V	V	Linux Kernel 4.14
	Intel® Q370							V						Linux Kernel 4.14
	Intel® H310							V						Linux Kernel 4.14
	Intel® CM246							V						Linux Kernel 4.14
	Intel® QM370							V						Linux Kernel 4.14
	Intel® HM370							V						Linux Kernel 4.14
Intel® Broadwell-DE					V	V	V		V	V	V		Linux Kernel 3.19	
Kaby Lake	Intel® C236							V	V	V				Linux Kernel 4.14
	Intel® Q170							V						Linux Kernel 4.14
	Intel® H110							V						Linux Kernel 4.14
	Intel® CM238							V						Linux Kernel 4.14
	Intel® QM175							V						Linux Kernel 4.14
	Intel® HM175							V						Linux Kernel 4.14
	Intel® Kaby Lake ULT							V						Linux Kernel 4.14
Skylake	Intel® C236				V	V	V	V		V	V	V		Linux Kernel 4.0 (3.2)
	Intel® Q170				V	V	V	V						Linux Kernel 4.0 (3.2)
	Intel® H110				V	V	V	V						Linux Kernel 4.0 (3.2)
	Intel® CM236				V	V	V	V						Linux Kernel 4.0 (3.2)
	Intel® QM170				V	V	V	V						Linux Kernel 4.0 (3.2)
	Intel® HM170				V	V	V	V						Linux Kernel 4.0 (3.2)
	Intel® Skylake ULT				V	V	V	V						Linux Kernel 4.0 (3.2)
	Intel® Broadwell ULT				V	V	V	V						Linux Kernel 3.19
Haswell	Intel® C226				V	V	V	V	V	V	V			Linux Kernel 3.x
	Intel® Q87				V	V	V	V						Linux Kernel 3.x
	Intel® H81				V	V	V	V						Linux Kernel 3.x
	Intel® QM87				V	V	V	V						Linux Kernel 3.x
	Intel® Haswell ULT				V	V	V	V						Linux Kernel 2.6.3x
Ivy Bridge	Intel® C216				V	V	V	V	V	V	V			Linux Kernel 2.6.3x
	Intel® Q77				V	V	V	V						Linux Kernel 2.6.3x
	Intel® QM77				V	V	V	V						Linux Kernel 2.6.3x
Sandy Bridge	Intel® C206				V	V	V		V	V	V			Linux Kernel 2.6.3x
	Intel® Q67	V			V	V	V							Linux Kernel 2.6.3x
	Intel® B65	V			V	V	V							Linux Kernel 2.6.3x
	Intel® H61	V			V	V	V							Linux Kernel 2.6.3x
	Intel® QM67	V			V	V	V							Linux Kernel 2.6.3x
	Intel® HM65	V			V	V	V							Linux Kernel 2.6.3x
Intel® Legacy	Intel® Q57				V	V								Linux Kernel 2.6.2x
	Intel® QM57				V	V								Linux Kernel 2.6.2x
	Intel® HM55				V	V								Linux Kernel 2.6.2x
	Intel® Apollo Lake N4000/ E3900							V						Linux Yocto Project 4.1
Intel® Atom™	Intel® Braswell N3000				V	V	V	V						Linux Kernel 3.14 Android 5.0
	Intel® Bay Trail J1900/ N2930/N2807/E3800		V	V		V	V	V						Linux Kernel 3.12 Android 4.2 (32 bit) Android 4.4 (64 bit)
	Intel® D2550/N2600/ N2800+ NM10				V	V								Linux Kernel 2.6.35
	Intel® D2550/N2600/N2800 + ICH10R				V	V								Linux Kernel 2.6.35
	Intel® D525/D425/ N455/ N425 + ICH8M	V			V	V								Linux Kernel 2.6.2x
AMD®	AMD® R-series (MERLIN FALCON) SoC					V	V	V						Linux Kernel 3.13
	AMD® G-series (eKABINI) SoC	V	V	V	V	V	V	V						Linux Kernel 3.x
	AMD® Geode LX800 + CS5536				V									Linux Kernel 2.6.18



## Microserver D1500 family CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
FCBGA1667	Xeon® E3	22nm Broadwell	16/32	D-1577	1.30 GHz	24 MB	45 W	None	None	DDR4-2133, DDR3L-1600	
			16/32	D-1571	1.30 GHz	24 MB	45 W				
			12/24	D-1567	2.10 GHz	18 MB	65 W				
			12/24	D-1559	1.50 GHz	18 MB	45 W				
			12/24	D-1557	1.50 GHz	18 MB	45 W				
			8/16	D-1548	2.00 GHz	12 MB	45 W				
			8/16	D-1541	2.10 GHz	12 MB	45 W				
			8/16	D-1540	2.00 GHz	12 MB	45 W				
			8/16	D-1539	1.60 GHz	12 MB	35 W				
			8/16	D-1537	1.70 GHz	12 MB	35 W				
			6/12	D-1531	2.20 GHz	9 MB	45 W				
			4/8	D-1529	1.30 GHz	6 MB	20 W				
			6/12	D-1528	1.90 GHz	9 MB	35 W				
			4/8	D-1527	2.20 GHz	6 MB	35 W				
	4/8	D-1521	2.40 GHz	6 MB	45 W						
	4/8	D-1520	2.20 GHz	6 MB	45 W						
	4/8	D-1518	2.20 GHz	6 MB	35 W						
	Pentium®			4/8	D1519	1.50 GHz	6 MB			25 W	
				4/8	D1517	1.60 GHz	6 MB			25 W	
				2/2	D1509	1.50 GHz	3 MB			19 W	
2/4				D1508	2.20 GHz	3 MB	25 W				
2/2				D1507	1.20 GHz	3 MB	20 W				

## Workstation E3 CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
FCLGA2066	Xeon® W	14nm Cascade Lake	18/36	W-2295	3.00 GHz	24.75 MB	165 W	None	None	DDR4 2933	C422
			14/28	W-2275	3.30GHz	19.25 MB	165 W	None	None		
			12/24	W-2265	3.50 GHz	19.25 MB	165 W	None	None		
			10/20	W-2255	3.70 GHz	19.25 MB	165 W	None	None		
			8/16	W-2245	3.90 GHz	16.5 MB	155 W	None	None		
			6/12	W-2235	3.80 GHz	8.25 MB	130W	None	None		
			4/8	W-2225	4.10 GHz	8.25 MB	105W	None	None		
			4/8	W-2223	3.60 GHz	8.25 MB	120W	None	None		
FCLGA3647			28/56	W-3275	2.50 GHz	38.5 MB	205W	None	None	DDR4 2666	C621
			24/48	W-3265M	2.70 GHz	33 MB	205W	None	None		
			24/48	W-3265	2.70GHz	33MB	205W	None	None		
			16/32	W-3245M	3.20 GHz	22MB	205W	None	None		
			16/32	W-3245	3.20 GHz	22 MB	205W	None	None		
			12/24	W-3235	3.30 GHz	19.25 MB	180W	None	None		
			8/16	W-3225	3.70 GHz	16.5 MB	160W	None	None		
			8/16	W-3223	3.50 GHz	16.5 MB	160W	None	None		
FCLGA1151	Xeon® E	14nm Coffee lake	6/12	E-2186G	3.80 GHz	12MB	95W	Intel® UHD Graphics P630	350 MHz	DDR4-2666	C246/ C242
			6/12	E-2176G	3.70 GHz	12MB	80W				
			4/8	E-2174G	3.80 GHz	8MB	71W				
			6/12	E-2146G	3.50 GHz	12MB	80W				
			4/8	E-2144G	3.60 GHz	8MB	71W				
			6/12	E-2136	3.30 GHz	12MB	80W	NA	NA		
			4/8	E-2134	3.50 GHz	8MB	71W	NA	NA		
			6/6	E-2126G	3.30 GHz	12MB	80W	Intel® UHD Graphics P630	350 MHz		
			4/4	E-2124	3.30 GHz	8MB	71W	NA	NA		
			4/4	E-2124G	3.40 GHz	8MB	71W	Intel® UHD Graphics P630	350 MHz		

Yellow means long-term support

# Workstation E3 CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
FCLGA1151	Xeon® E3	14nm Kaby Lake	4/8	E3-1285 V6	4.1GHz	8 MB	79W	Intel® HD Graphics P630	350 MHz	DDR4-2400, DDR3L-1866	C236
			4/8	E3-1280 V6	3.9GHz	8 MB	72W	None	None		
			4/8	E3-1275 V6	3.8GHz	8 MB	73W	Intel® HD Graphics P630	350 MHz		
			4/8	E3-1270 V6	3.8GHz	8 MB	72W	None	None		
			4/8	E3-1245 V6	3.7GHz	8 MB	73W	Intel® HD Graphics P630	350 MHz		
			4/8	E3-1240 V6	3.7GHz	8 MB	72W	None	None		
			4/8	E3-1230 V6	3.5GHz	8 MB	72W	None	None		
			4/4	E3-1225 V6	3.3GHZ	8 MB	73W	Intel® HD Graphics P630	350 MHz		
FCLGA2066	Xeon® W	14nm Skylake	4/4	W-2123	3.60 GHz	8.25MB	120W	None	None	DDR4-2666 ECC R-DIMM / LR-DIMM	C422
			4/4	W-2125	4.00 GHz	8.25MB	120W	None	None		
			6/12	W-2133	3.60 GHz	8.25MB	140W	None	None		
			6/12	W-2135	3.70 GHz	8.25MB	140W	None	None		
			8/16	W-2145	3.70 GHz	11MB	140W	None	None		
			10/20	W-2155	3.30 GHz	13.75MB	140W	None	None		
			14/28	W-2175	2.50 GHz	19MB	140W	None	None		
			18/36	W-2195	2.30 GHz	24.75MB	140W	None	None		
FCLGA1151	Xeon® E3	14nm Skylake	4/8	E3-1515MV5	2.80 GHz	8 MB	45 W	Intel® Iris™ Pro Graphics P580	350 MHz	DDR4-2133, LPDDR3-1866, DDR3L-1600	C236
			4/8	E3-1505MV5	2.80 GHz	8 MB	45 W	Intel® HD Graphics P530	350 MHz		
			4/8	E3-1578LV5	2.00 GHz	8 MB	45 W	Intel® Iris™ Pro Graphics P580	700 MHz		
			4/8	E3-1558LV5	1.90 GHz	8 MB	45 W	Intel® Iris™ Pro Graphics P555	650 MHz	DDR4-2133, LPDDR3-1866, DDR3L-1600	
			4/8	E3-1505LV5	2.00 GHz	8 MB	25 W	Intel® HD Graphics P530	350 MHz		
			4/8	E3-1268LV5	2.40 GHz	8 MB	35 W	Intel® HD Graphics P530	350 MHz	DDR4-1866/2133, DDR3L-1333/1600@1.35V	
			4/8	E3-1585V5	3.50 GHz	8 MB	65 W	Intel® Iris™ Pro Graphics P580	700 MHz		
			4/8	E3-1585LV5	3.00 GHz	8 MB	45 W	Intel® Iris™ Pro Graphics P580	700 MHz	DDR3L, LPDDR3 1600MHz, DDR4 2133MHz at 1.2V	
			4/8	E3-1565LV5	2.50 GHz	8 MB	35 W	Intel® Iris™ Pro Graphics P580	700 MHz		
			4/8	E3-1280V5	3.70 GHz	8 MB	80 W	None	None		
			4/8	E3-1275V5	3.60 GHz	8 MB	80 W	Intel® HD Graphics P530	400 MHz		
			4/8	E3-1270V5	3.60 GHz	8 MB	80 W	None	None		
			4/8	E3-1260LV5	2.90 GHz	8 MB	45 W	None	None		
			4/8	E3-1245V5	3.50 GHz	8 MB	80 W	Intel® HD Graphics P530	400 MHz		
			4/8	E3-1240LV5	2.10 GHz	8 MB	25 W	None	None		
			4/8	E3-1240V5	3.50 GHz	8 MB	80 W	None	None		
			4/4	E3-1235LV5	2.00 GHz	8 MB	25 W	Intel® HD Graphics P530	400 MHz		
			4/8	E3-1230V5	3.40 GHz	8 MB	80 W	None	None		
4/4	E3-1225V5	3.30 GHz	8 MB	80 W	Intel® HD Graphics P530	400 MHz					
4/4	E3-1220V5	3.00 GHz	8 MB	80 W	None	None					
FCLGA1150	Xeon® E3	22nm Haswell	4/4	E3-1220 v3	3.1 GHz	8 MB	80 W	None	-	DDR3 and DDR3L 1333/1600 at 1.5V	C226
			2/4	E3-1220LV3	1.1 GHz	4 MB	13 W	None	-		
			4/4	E3-1225V3	3.2 GHz	8 MB	84 W	Intel® HD Graphics P4600	350 MHz	DDR3 and DDR3L 1333/1600 at 1.5V	
			4/4	E3-1226V3	3.3 GHz	8 MB	84 W	Intel® HD Graphics P4600	350 MHz		
			4/8	E3-1230 v3	3.3 GHz	8 MB	80 W	None	-		
			4/8	E3-1230LV3	1.8 GHz	8 MB	25 W	None	-		
			4/8	E3-1231V3	3.4 GHz	8 MB	80 W	None	-		
			4/8	E3-1240 v3	3.4 GHz	8 MB	80 W	None	-		
			4/8	E3-1240LV3	2 GHz	8 MB	25 W	None	-		
			4/8	E3-1241V3	3.5 GHz	8 MB	80 W	None	-		
			4/8	E3-1245 v3	3.4 GHz	8 MB	84 W	Intel® HD Graphics P4600	350 MHz		
			4/8	E3-1246V3	3.5 GHz	8 MB	84 W	Intel® HD Graphics P4600	350 MHz		
			4/8	E3-1265LV3	2.5 GHz	8 MB	45 W	Intel® HD Graphics 4600	350 MHz		
			4/8	E3-1268LV3	2.3 GHz	8 MB	45 W	Intel® HD Graphics 4600	350 MHz		
			4/8	E3-1270 v3	3.5 GHz	8 MB	80 W	None	-		
			4/8	E3-1271V3	3.6 GHz	8 MB	80 W	None	-		
			4/8	E3-1275 v3	3.5 GHz	8 MB	84 W	Intel® HD Graphics P4600	350 MHz		
			4/8	E3-1275LV3	2.7 GHz	8 MB	45 W	Intel® HD Graphics	350 MHz		
			4/8	E3-1276V3	3.6 GHz	8 MB	84 W	Intel® HD Graphics P4600	350 MHz		
			4/8	E3-1280 v3	3.6 GHz	8 MB	82 W	None	-		
			4/8	E3-1281V3	3.7 GHz	8 MB	82 W	None	-		
			4/8	E3-1285 v3	3.6 GHz	8 MB	84 W	None	-		
			4/8	E3-1285LV3	3.1 GHz	8 MB	65 W	Intel® HD Graphics P4700	350 MHz		
			4/8	E3-1286V3	3.7 GHz	8 MB	84 W	Intel® HD Graphics P4700	350 MHz		
4/8	E3-1286LV3	3.2 GHz	8 MB	65 W	Intel® HD Graphics P4700	350 MHz					

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## Workstation E3 CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
LGA1155	Xeon® E3	22nm Ivy Bridge	4/8	E3-1290V2	3.7 GHz	8 MB	87 W	-	-	DDR3-1333/1600	C206/C216
			4/8	E3-1280V2	3.6 GHz	8 MB	69 W	-	-		
			4/8	E3-1275V2	3.5 GHz	8 MB	77 W	-	1.25 GHz		
			4/8	E3-1270V2	3.5 GHz	8 MB	69 W	-	-		
			4/8	E3-1265LV2	2.5 GHz	8 MB	45 W	-	1.15 GHz		
			4/8	E3-1245V2	3.4 GHz	8 MB	77 W	-	1.25 GHz		
			4/8	E3-1240V2	3.4 GHz	8 MB	69 W	-	-		
			4/8	E3-1230V2	3.3 GHz	8 MB	69 W	-	-		
			4/4	E3-1225V2	3.2 GHz	8 MB	77 W	-	1.25 GHz		
			4/4	E3-1220V2	3.1 GHz	8 MB	69 W	-	-		
	4/2	E3-1220LV2	2.3 GHz	3 MB	17 W	-	-				
	Xeon® E3	32nm Sandy Bridge	4/8	E3-1290	3.6 GHz	8 MB	95 W	-	-	DDR3-1066/1333	
			4/8	E3-1280	3.5 GHz	8 MB	95 W	-	-		
			4/8	E3-1275	3.4 GHz	8 MB	95 W	-	1.35 GHz		
			4/8	E3-1270	3.4 GHz	8 MB	80 W	-	-		
			4/8	E3-1260L	2.4 GHz	8 MB	45 W	-	1.25 GHz		
			4/8	E3-1245	3.3 GHz	8 MB	95 W	-	1.35 GHz		
			4/8	E3-1240	3.3 GHz	8 MB	80 W	-	-		
			4/8	E3-1235	3.2 GHz	8 MB	95 W	-	1.35 GHz		
			4/8	E3-1230	3.2 GHz	8 MB	80 W	-	-		
			4/4	E3-1225	3.1 GHz	6 MB	95 W	-	1.35 GHz		
			4/2	E3-1220L	2.2 GHz	3 MB	20 W	-	-		
4/4			E3-1220	3.1 GHz	8 MB	80 W	-	-			

## Desktop Core™ i7/i5/i3/Pentium®/Celeron® CPU List

Supported Sockets	Brand	process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
FCLGA1151	Core™ i9	14nm Coffee Lake refresh	8/16	i9-9900KF	3.60 GHz	16MB	95W	N/A	N/A	DDR4-2666	H310/Q370/C246
			8/16	i9-9900T	2.10 GHz	16MB	35W	Intel® UHD Graphics 630			
			8/16	i9-9900	3.10 GHz	16MB	65W	Intel® UHD Graphics 630			
	Core™ i7	14nm Coffee Lake refresh	8/8	i7-9700E	2.60 GHz	12MB	65W	Intel® UHD Graphics 630	350 MHz		
			8/8	9700TE	1.80 GHz	12MB	35W	Intel® UHD Graphics 630			
			8/8	i7-9700K	3.60 GHz	12MB	95W	Intel® UHD Graphics 630			
			8/8	i7-9700	3.00 GHz	12MB	65W	Intel® UHD Graphics 630			
			8/8	i7-9700T	2.00 GHz	12MB	35W	Intel® UHD Graphics 630			
			8/8	i7-9700	3.00 GHz	12MB	65W	Intel® UHD Graphics 630			
	Core™ i5	14nm Coffee Lake refresh	6/6	i5-9500E	3.00 GHz	9MB	65W	Intel® UHD Graphics 630	350 MHz		
			6/6	i5-9500TE	2.20 GHz	9MB	35W	Intel® UHD Graphics 630			
			6/6	i5-9600K	3.70 GHz	9MB	95W	Intel® UHD Graphics 630			
			6/6	i5-9500	3.00 GHz	9MB	65W	Intel® UHD Graphics 630			
			6/6	i5-9400	2.90 GHz	9MB	65W	Intel® UHD Graphics 630			
			6/6	i5-9500T	2.20 GHz	9MB	35W	Intel® UHD Graphics 630			
			6/6	i5-9400T	1.80 GHz	9MB	35W	Intel® UHD Graphics 630			
	Core™ i3	14nm Coffee Lake refresh	4/4	i3-9100E	3.10 GHz	6MB	65W	Intel® UHD Graphics 630	350 MHz		
			4/4	i3-9100TE	2.20GHz	6MB	35W	Intel® UHD Graphics 630			
		14nm Coffee Lake	4/4	i3-9100	3.60 GHz	6MB	65W	Intel® UHD Graphics 630			
			4/4	i3-9300	3.70 GHz	8MB	62W	Intel® UHD Graphics 630			
4/4			i3-9300T	3.20 GHz	8MB	35W	Intel® UHD Graphics 630				
4/4			i3-9100T	3.10 GHz	6MB	35W	Intel® UHD Graphics 630				
4/4			i3-9350K	4.00 GHz	8MB	91W	Intel® UHD Graphics 630				
FCLGA1151	Core™ i9	14nm Coffee Lake	8/16	i9-9900K	3.60 GHz	16MB	95W	Intel® UHD Graphics 630	350 MHz	DDR4-2666	H310/Q370
			8/8	i7-9700K	3.60 GHz	12MB	95W	Intel® UHD Graphics 630			
	6/12	i7-8700T	2.40 GHz	12MB	35W	Intel® UHD Graphics 630					
	6/12	i7-8700K	3.70 GHz	12MB	95W	Intel® UHD Graphics 630					
	6/12	i7-8700	3.20 GHz	12MB	65W	Intel® UHD Graphics 630					
	Core™ i7	14nm Coffee Lake	6/12	i7-8086K	4.00 GHz	12MB	95W	Intel® UHD Graphics 630			
			4/4	i3-8350K	4.00 GHz	8MB	91W	Intel® UHD Graphics 630			
			4/4	i3-8300	3.70 GHz	8MB	62W	Intel® UHD Graphics 630			
			4/4	i3-8300T	3.20 GHz	8MB	35W	Intel® UHD Graphics 630			
			4/4	i3-8100	3.60 GHz	6MB	65W	Intel® UHD Graphics 630			
Core™ i3	14nm Coffee Lake	4/4	i3-8100T	3.10 GHz	6MB	35W	Intel® UHD Graphics 630	350 MHz	DDR4-2400	H310/Q370	

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# Desktop Core™ i7/i5/i3/Pentium®/Celeron® CPU List

Supported Sockets	Brand	process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
FCLGA1151	Core™ i5	14nm Coffee Lake	6/6	i5-9600K	3.70 GHz	9MB	95W	Intel® UHD Graphics 630	350 MHz	DDR4-2666	H310/Q370
			6/6	i5-8600T	2.30 GHz	9MB	35W				
			6/6	i5-8600K	3.60 GHz	9MB	95W				
			6/6	i5-8600	3.10 GHz	9MB	65W				
			6/6	i5-8500T	2.10 GHz	9MB	35W				
			6/6	i5-8500	3.00 GHz	9MB	65W				
			6/6	i5-8400T	1.70 GHz	9MB	35W				
	Pentium®	14nm Coffee Lake	2/4	G5600	3.90 GHz	4MB	54W	Intel® UHD Graphics 630	DDR4-2400	H310/Q370	
			2/4	G5500T	3.20 GHz	4MB	35W				
			2/4	G5500	3.80 GHz	4MB	54W				
			2/4	G5400T	3.10 GHz	4MB	35W				
	Celeron®	14nm Coffee Lake	2/2	G4920	3.20 GHz	2MB	54W	Intel® UHD Graphics 610	DDR4-2400	H310/Q370	
			2/2	G4900T	2.90 GHz	2MB	35W				
			2/2	G4900	3.10 GHz	2 MB	54W				
FCLGA1151	Core™ i7	14nm Kaby Lake	4/8	i7-7700	3.6GHz	8 MB	65W	Intel® HD Graphics 630	350 MHz	DDR4-2133/2400, DDR3L-1333/1600 @ 1.35V	C236/Q170/H110
			4/8	i7-7700K	4.2GHz	8 MB	91W				
			4/8	i7-7700T	2.9GHz	8 MB	35W				
		14nm Skylake	4/8	i7-6785R	3.30 GHz	8 MB	65 W	Intel® Iris™ Pro Graphics 580			
			4/8	i7-6700K	4.00 GHz	8 MB	91 W	Intel® HD Graphics 530			
			4/8	i7-6700T	2.80 GHz	8 MB	35 W				
	4/8	i7-6700	3.40 GHz	8 MB	65 W						
	Core™ i5	14nm Kaby Lake	4/4	i5-7600K	3.8GHz	6 MB	91W	Intel® HD Graphics 630	350 MHz	DDR4-2133/2400, DDR3L-1333/1600 @ 1.35V	C236/Q170/H110
			4/4	i5-7600T	2.8GHz	6 MB	35W				
			4/4	i5-7600	3.5GHz	6 MB	65W				
			4/4	i5-7500	3.4GHz	6 MB	65W				
			4/4	i5-7400T	2.4GHz	6 MB	35W				
			4/4	i5-7500T	2.7GHz	6 MB	35W				
		14 nm Skylake	4/4	i5-6600	3.30 GHz	6 MB	65 W	Intel® Iris™ Pro Graphics 580			
			4/4	i5-6600K	3.50 GHz	6 MB	91 W	Intel® HD Graphics 530			
			4/4	i5-6585R	2.80 GHz	6 MB	65 W				
			4/4	i5-6500	3.20 GHz	6 MB	65 W				
			4/4	i5-6500T	2.50 GHz	6 MB	35 W	Intel® HD Graphics 510			
			4/4	i5-6402P	2.80 GHz	6 MB	65 W				
			4/4	i5-6400	2.70 GHz	6 MB	65 W	Intel® HD Graphics 530			
			4/4	i5-6400T	2.20 GHz	6 MB	35 W				
	Core™ i3	14nm Kaby Lake	2/4	i3-7350K	4.2GHz	4 MB	60W	Intel® HD Graphics 630	350 MHz	DDR4-2133/2400, DDR3L-1333/1600 @ 1.35V	C236/Q170/H110
			2/4	i3-7320	4.1GHz	4 MB	51W				
			2/4	i3-7300	4.0GHz	4 MB	51W				
			2/4	i3-7300T	3.5GHz	4 MB	35W				
			2/4	i3-7101E	3.9GHz	3 MB	54W				
		14 nm Skylake	2/4	i3-7101TE	3.4GHz	3 MB	35W	Intel® HD Graphics 530			
			2/4	i3-7100T	3.4GHz	3 MB	35W				
2/4			i3-7100T	3.9GHz	3 MB	51W					
2/4			i3-6300	3.80 GHz	4 MB	51 W					
2/4			i3-6300T	3.30 GHz	4 MB	35 W					
Pentium®	14nm Kaby Lake	2/4	G4620	3.7GHz	3 MB	51W	Intel® HD Graphics 630	350 MHz	DDR4-2133/2400, DDR3L-1333/1600 @ 1.35V	C236/Q170/H110	
		2/4	G4600T	3.0GHz	3 MB	35W					
		2/4	G4600	3.6GHz	3 MB	51W					
		2/4	G4560T	2.9GHz	3 MB	35W					
	14nm Skylake	2/2	G4560	3.5GHz	3 MB	54W	Intel® HD Graphics 610				
		2/2	G4500	3.50 GHz	3 MB	51W			Intel® HD Graphics 530		
		2/2	G4500T	3.00 GHz	3 MB	35W					
		2/2	G4520	3.60 GHz	3 MB	51W			Intel® HD Graphics 510		
2/2	G4400	3.30 GHz	3 MB	54W							
2/2	G4400T	2.90 GHz	3 MB	35W	Intel® HD Graphics 510						
2/2	G4400TE	2.40 GHz	3 MB	35W							

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# Desktop Core™ i7/i5/i3/Pentium®/Celeron® CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
FCLGA1151	Celeron®	14nm Kaby Lake	2/2	G3950	3.0GHz	2 MB	51W	Intel® HD Graphics 610	350 MHz	DDR4 2133, DDR3L 1333/1600 @ 1.35V	C236/Q170/H110
			2/2	G3930TE	2.7GHz	2 MB	35W			DDR4-2133, DDR3L-1600	
			2/2	G3930T	2.7GHz	2 MB	35W			DDR4 2133, DDR3L 1333/1600 @ 1.35V	
			2/2	G3930E	2.9GHz	2 MB	54W			DDR4-2133, DDR3L-1600	
			2/2	G3930	2.9GHz	2 MB	51W			DDR4 2133, DDR3L 1333/1600 @ 1.35V	
		14 nm Skylake	2/2	G3920	2.90 GHz	2 MB	51 W	Intel® HD Graphics 510	350 MHz	DDR4-1866/2133, DDR3L-1333/1600 @ 1.35V	
			2/2	G3900T	2.60 GHz	2 MB	35 W				
			2/2	G3900	2.80 GHz	2 MB	51 W				
			2/2	G3900TE	2.30 GHz	2 MB	35 W				
FCLGA1150	Core™ i7	22 nm Haswell	4/4	i7-4765T	2 GHz	8 MB	35 W	Intel® HD Graphics 4600	350 MHz	DDR3-1333/1600, DDR3L-1333/1600 @ 1.5V	C226/Q87/H81 C226/Q87/H81
			2/4	i7-4770	3.4 GHz	8 MB	84 W				
			4/4	i7-4770K	3.5 GHz	8 MB	84 W				
			4/8	i7-4770S	3.1 GHz	8 MB	65 W				
			4/8	i7-4770T	2.5 GHz	8 MB	45 W				
			4/8	i7-4771	3.5 GHz	8 MB	84 W				
			4/8	i7-4785T	2.2 GHz	8 MB	35 W				
			4/8	i7-4790	3.6 GHz	8 MB	84 W				
			4/8	i7-4790S	3.2 GHz	8 MB	65 W				
			4/8	i7-4790T	2.7 GHz	8 MB	45 W				
			4/4	i5-4670	3.4 GHz	6 MB	84 W				
			4/4	i5-4670K	3.4 GHz	6 MB	84 W				
			4/4	i5-4670S	3.1 GHz	6 MB	65 W				
			4/4	i5-4670T	2.3 GHz	6 MB	45 W				
	4/4	i5-4690	3.5 GHz	6 MB	84 W						
	4/4	i5-4690S	3.2 GHz	6 MB	65 W						
	4/4	i5-4690T	2.5 GHz	6 MB	45 W						
	4/4	i5-4570	3.2 GHz	6 MB	84 W						
	4/4	i5-4570S	2.9 GHz	6 MB	65 W						
	2/4	i5-4570T	2.9 GHz	4 MB	35 W						
	4/4	i5-4590	3.3 GHz	6 MB	84 W						
	4/4	i5-4590S	3 GHz	6 MB	65 W						
	4/4	i5-4590T	2 GHz	6 MB	35 W						
	4/4	i5-4460T	1.9 GHz	6 MB	35 W						
	4/4	i5-4460S	2.9 GHz	6 MB	65 W						
	4/4	i5-4460	3.2 GHz	6 MB	84 W						
	4/4	i5-4440S	2.8 GHz	6 MB	65 W						
	4/4	i5-4440	3.1 GHz	6 MB	84 W						
	4/4	i5-4430S	2.7 GHz	6 MB	65 W						
	4/4	i5-4430	3 GHz	6 MB	84 W						
	Core™ i3	Core™ i3	2/4	i3-4330	3.5 GHz	4 MB	54 W	Intel® HD Graphics 4600	350 MHz		
			2/4	i3-4330T	3 GHz	4 MB	35 W				
			2/4	i3-4340	3.6 GHz	4 MB	54 W				
			2/4	i3-4350	3.6 GHz	4 MB	54 W				
			2/4	i3-4350T	3.1 GHz	4 MB	35 W				
			2/4	i3-4360	3.7 GHz	4 MB	54 W				
			2/4	i3-4360T	3.2 GHz	4 MB	35 W				
			2/4	i3-4370	3.8 GHz	4 MB	54 W				
			2/4	i3-4370T	3.3 GHz	4 MB	35 W				
			2/4	i3-4170T	3.2 GHz	3 MB	35 W				
		2/4	i3-4170	3.7 GHz	3 MB	54 W					
		2/4	i3-4160T	3.1 GHz	3 MB	35 W					
		2/4	i3-4160	3.6 GHz	3 MB	54 W					
		2/4	i3-4150T	3 GHz	3 MB	35 W					
		2/4	i3-4150	3.5 GHz	3 MB	54 W					
		2/4	i3-4130T	2.9 GHz	3 MB	35 W					
2/4		i3-4130	3.4 GHz	3 MB	54 W						
2/4		i3-4130	3.4 GHz	3 MB	54 W	Intel® HD Graphics 4400	200 MHz				
2/4		i3-4130	3.4 GHz	3 MB	54 W						
2/4		i3-4130	3.4 GHz	3 MB	54 W						
2/4	i3-4130	3.4 GHz	3 MB	54 W							
2/4	i3-4130	3.4 GHz	3 MB	54 W							
2/4	i3-4130	3.4 GHz	3 MB	54 W							
2/4	i3-4130	3.4 GHz	3 MB	54 W							
2/4	i3-4130	3.4 GHz	3 MB	54 W							
2/4	i3-4130	3.4 GHz	3 MB	54 W							
2/4	i3-4130	3.4 GHz	3 MB	54 W							

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# Desktop Core™ i7/i5/i3/Pentium®/Celeron® CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset
FCLGA1150	Pentium®	22nm Haswell	2/2	G3470	3.6 GHz	3 MB	53 W	Intel® HD Graphics	350 MHz	DDR3-1333/1600, DDR3L-1333/1600 @ 1.5V	C226/Q87/ H81
			2/2	G3460T	3 GHz	3 MB	35 W		200 MHz		
			2/2	G3460	3.5 GHz	3 MB	53 W		350 MHz		
			2/2	G3450T	2.9 GHz	3 MB	35 W		200 MHz		
			2/2	G3450	3.4 GHz	3 MB	53 W		350 MHz		
			2/2	G3440T	2.8 GHz	3 MB	35 W		200 MHz		
			2/2	G3440	3.3 GHz	3 MB	53 W		350 MHz		
			2/2	G3430	3.3 GHz	3 MB	53 W		350 MHz		
			2/2	G3420T	2.7 GHz	3 MB	35 W		200 MHz		
			2/2	G3420	3.2 GHz	3 MB	53 W		350 MHz		
			2/2	G3260T	2.9 GHz	3 MB	35 W		200 MHz		
			2/2	G3260	3.3 GHz	3 MB	53 W		350 MHz		
			2/2	G3258	3.2 GHz	3 MB	53 W		350 MHz		
			2/2	G3250T	2.8 GHz	3 MB	35 W		200 MHz		
			2/2	G3250	3.2 GHz	3 MB	53 W		350 MHz		
			2/2	G3240T	2.7 GHz	3 MB	35 W		200 MHz		
			2/2	G3240	3.1 GHz	3 MB	53 W		350 MHz		
			2/2	G3220T	2.6 GHz	3 MB	35 W		200 MHz		
	2/2	G3220	3 GHz	3 MB	53 W	350 MHz					
	Celeron®	22nm Haswell	2/2	G1820	2.7 GHz	2 MB	53 W	350 MHz			
			2/2	G1820T	2.4 GHz	2 MB	35 W	200 MHz			
			2/2	G1830	2.8 GHz	2 MB	53 W	350 MHz			
			2/2	G1840	2.8 GHz	2 MB	53 W	350 MHz			
			2/2	G1840T	2.5 GHz	2 MB	35 W	200 MHz			
			2/2	G1850	2.9 GHz	2 MB	53 W	350 MHz			
			2/2	G1820	2.7 GHz	2 MB	53 W	350 MHz			
2/2			G1820T	2.4 GHz	2 MB	35 W	200 MHz				
LGA1155	Core™ i7	22nm Ivy Bridge	4/8	i7-3770T	2.5 GHz	8 MB	45 W	-	1.15 GHz	DDR3-1333/1600	
			4/8	i7-3770S	3.1 GHz	8 MB	65 W	-	1.15 GHz		
			4/8	i7-3770K	3.5 GHz	8 MB	77 W	-	1.15 GHz		
			4/8	i7-3770	3.4 GHz	8 MB	77 W	-	1.15 GHz		
	Core™ i7	32nm Sandy Bridge	4/8	i7-2700K	3.5 GHz	8 MB	95 W	-	1.35 GHz	DDR3-1066/1333	
			4/8	i7-2600S	2.8 GHz	8 MB	65 W	-	1.35 GHz		
			4/8	i7-2600K	3.4 GHz	8 MB	95 W	-	1.35 GHz		
			4/8	i7-2600	3.4 GHz	8 MB	95 W	-	1.35 GHz		
	Core™ i5	22nm Ivy Bridge	4/4	i5-3570T	2.3 GHz	6 MB	45 W	-	1.15 GHz	DDR3-1333/1600	
			4/4	i5-3570S	3.1 GHz	6 MB	65 W	-	1.15 GHz		
			4/4	i5-3570K	3.4 GHz	6 MB	77 W	-	1.15 GHz		
			4/4	i5-3570	3.4 GHz	6 MB	77 W	-	1.15 GHz		
			4/4	i5-3550S	3 GHz	6 MB	65 W	-	1.15 GHz		
			4/4	i5-3550	3.3 GHz	6 MB	77 W	-	1.15 GHz		
			4/4	i5-3475S	2.9 GHz	6 MB	65 W	-	1.1 GHz		
			2/4	i5-3470T	2.9 GHz	3 MB	35 W	-	1.1 GHz		
			4/4	i5-3470S	2.9 GHz	6 MB	65 W	-	1.1 GHz		
			4/4	i5-3470	3.2 GHz	6 MB	77 W	-	1.1 GHz		
			4/4	i5-3450S	2.8 GHz	6 MB	65 W	-	1.1 GHz		
			4/4	i5-3450	3.1 GHz	6 MB	77 W	-	1.1 GHz		
			4/4	i5-3350P	3.1 GHz	6 MB	69 W	-	1.05 GHz		
			4/4	i5-3330S	2.7 GHz	6 MB	65 W	-	1.05 GHz		
			4/4	i5-3330	3 GHz	6 MB	77 W	-	1.05 GHz		
			Core™ i5	32nm Sandy Bridge	4/4	i5-2550K	3.4 GHz	6 MB	95 W		-
	4/4	i5-2500T			2.3 GHz	6 MB	45 W	-	1.25 GHz		
	4/4	i5-2500S			2.7 GHz	6 MB	65 W	-	1.1 GHz		
	4/4	i5-2500K			3.3 GHz	6 MB	95 W	-	1.1 GHz		
	4/4	i5-2500			3.3 GHz	6 MB	95 W	-	1.1 GHz		
	4/4	i5-2450P			3.2 GHz	6 MB	95 W	-	1.1 GHz		
	4/4	i5-2405S			2.5 GHz	6 MB	65 W	-	1.1 GHz		
	4/4	i5-2400S			2.5 GHz	6 MB	65 W	-	1.1 GHz		
	4/4	i5-2400			3.1 GHz	6 MB	95 W	-	1.1 GHz		
	2/4	i5-2390T			2.7 GHz	3 MB	35 W	-	1.1 GHz		
	4/4	i5-2380P			3.1 GHz	6 MB	95 W	-	1.1 GHz		
	4/4	i5-2320			3 GHz	6 MB	95 W	-	1.1 GHz		
	4/4	i5-2310			2.9 GHz	6 MB	95 W	-	1.1 GHz		
4/4	i5-2300	2.8 GHz			6 MB	95 W	-	1.1 GHz			

Yellow means long-term support

# Desktop Core™ i7/i5/i3/Pentium®/Celeron® CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Graphics Base Frequency	Memory Types	Chipset
LGA1155	Core™ i3	22nm Ivy Bridge	2/4	i3-3240T	2.9 GHz	3 MB	35 W	1.05 GHz	DDR3-1333/1600	Q77/Q67/B65/H61
			2/4	i3-3240	3.4 GHz	3 MB	55 W	1.05 GHz		
			2/4	i3-3225	3.3 GHz	3 MB	55 W	1.05 GHz		
			2/4	i3-3220T	2.8 GHz	3 MB	35 W	1.05 GHz		
			2/4	i3-3220	3.3 GHz	3 MB	55 W	1.05 GHz		
	Core™ i3	32nm Sandy Bridge	2/4	i3-2130	3.4 GHz	3 MB	65 W	1.1 GHz	DDR3-1066/1333	
			2/4	i3-2125	3.3 GHz	3 MB	65 W	1.1 GHz		
			2/4	i3-2120T	2.6 GHz	3 MB	35 W	1.1 GHz		
			2/4	i3-2120	3.3 GHz	3 MB	65 W	1.1 GHz		
			2/4	i3-2105	3.1 GHz	3 MB	65 W	1.1 GHz		
			2/4	i3-2102	3.1 GHz	3 MB	65 W	1.1 GHz		
			2/4	i3-2100T	2.5 GHz	3 MB	35 W	1.1 GHz		
			2/4	i3-2100	3.1 GHz	3 MB	65 W	1.1 GHz		
	Pentium®	22nm Ivy Bridge	2/2	G2120	3.1 GHz	3 MB	55 W	1.05 GHz	DDR3-1333/1600	
2/2			G2100T	2.6 GHz	3 MB	35 W	1.05 GHz			
LGA1155	Pentium®	32nm Sandy Bridge	2/2	G870	3.1 GHz	3 MB	65 W	1.1 GHz	DDR3-1066/1333	
			2/2	G860T	2.6 GHz	3 MB	35 W	1.1 GHz		
			2/2	G860	3 GHz	3 MB	65 W	1.1 GHz		
			2/2	G850	2.9 GHz	3 MB	65 W	1.1 GHz		
			2/2	G840	2.8 GHz	3 MB	65 W	1.1 GHz		
			2/2	G645T	2.5 GHz	3 MB	35 W	1.1 GHz		
			2/2	G645	2.9 GHz	3 MB	65 W	1.1 GHz		
			2/2	G640T	2.4 GHz	3 MB	35 W	1.1 GHz		
			2/2	G640	2.8 GHz	3 MB	65 W	1.1 GHz		
			2/2	G632	2.7 GHz	3 MB	65 W	1.1 GHz		
			2/2	G630T	2.3 GHz	3 MB	35 W	1.1 GHz		
			2/2	G630	2.7 GHz	3 MB	65 W	1.1 GHz		
			2/2	G622	2.6 GHz	3 MB	65 W	1.1 GHz		
			2/2	G620T	2.2 GHz	3 MB	35 W	1.1 GHz		
			2/2	G620	2.6 GHz	3 MB	65 W	1.1 GHz		
			Celeron®	22nm Ivy Bridge	2/2	G1610	2.6 GHz	2 MB		55 W
	2/2	G1620			2.7 GHz	2 MB	55 W	1.05 GHz		
	2/2	G1610T		2.3 GHz	2 MB	35 W	1.05 GHz			
	32nm Sandy Bridge	2/2		G555	2.7 GHz	2 MB	65 W	1 GHz		
		2/2	G550T	2.2 GHz	2 MB	35 W	1 GHz			
		2/2	G550	2.6 GHz	2 MB	65 W	1 GHz			
		2/2	G540T	2.1 GHz	2 MB	35 W	1 GHz			
		2/2	G540	2.5 GHz	2 MB	65 W	1 GHz			
		2/2	G530T	2 GHz	2 MB	35 W	1 GHz			
		2/2	G530	2.4 GHz	2 MB	65 W	1 GHz			
		1/2	G465	1.9 GHz	1.5 MB	35 W	1 GHz			
	1/2	G460	1.8 GHz	1.5 MB	35 W	1 GHz				
	1/1	G440	1.6 GHz	1 MB	35 W	1 GHz				
LGA1156	Core™ i7	45nm	Quad Core	i7-880	2.93G	8M	95W	-	DDR3-1333/1600	
				i7-875K	2.93G	8M	95W	-		
				i7-870S	2.66G	8M	82W	-		
				i7-870	2.93G	8M	95W	-		
				i7-860S	2.53G	8M	82W	-		
				i7-860	2.8G	8M	95W	-		
				i5-760	2.8G	8M	95W	-		
				i5-750S	2.4G	8M	82W	-		
	Core™ i5				i5-750	2.66G	8M	95W		-
					i5-680	3.6G	4M	73W		733MHz
	Core™ i5	32nm	Dual Core	i5-670	3.46G	4M	73W	733MHz		
				i5-661	3.33G	4M	87W	900MHz		
				i5-660	3.33G	4M	73W	733MHz		
				i5-665K	3.2G	4M	73W	733MHz		
				i5-650	3.2G	4M	73W	733MHz		
				i3-560	3.33G	4M	73W	733MHz		
				i3-550	3.2G	4M	73W	733MHz		
				i3-540	3.06G	4M	73W	733MHz		
	Core™ i3				i3-530	2.93G	4M	73W		733MHz
					G6960	2.933G	3M	73W		533MHz
Pentium®				G6950	2.8G	3M	73W	533MHz	DDR3-1333	

Yellow means long-term support \*HM65/HM55 chipset doesn't support Intel® AMT feature

# ULT CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset	
FCBGA1528	Core™ i7	14nm Whiskey Lake	4/8	i7-8565U	1.8GHz	8MB	15W	Intel® UHD Graphics 620	300 MHz	DDR4-2400, LPDDR3-2133	-	
			4/8	i7-8665U	1.9GHz	8MB	15W				-	
			4/8	i7-8665UE	1.7GHz	8MB	15W				-	
	4/8		i5-8265U	1.6GHz	6MB	15W	-					
	4/8		i5-8365U	1.6GHz	6MB	15W	-					
	4/8		i5-8365UE	1.6GHz	6MB	15W	-					
	2/4		i3-8145U	2.10 GHz	4MB	15W	-					
	2/4		i3-8145UE	2.2GHz	4MB	15W	-					
	Pentium®		2/4	5405U	2.3GHz	2MB	15W	-			DDR4-2133, LPDDR3-1866	-
FCBGA1356	Core™ i7	14nm Coffee lake	4/8	i7-8559U	2.70 GHz	8MB	28W	Intel® Iris™ Plus Graphics 655	300 MHz	DDR4-2400, LPDDR3-2133	-	
			4/8	i5-8269U	2.60 GHz	6MB	28W				-	
			4/8	i5-8259U	2.30 GHz	6MB	28W				-	
FCBGA1356	Core™ i7	14nm Kabylake	2/4	i7-7660U	2.5GHz	4MB	15W	Intel® Iris™ Plus Graphics 640	300 MHz	DDR4-2133, LPDDR3-1866, DDR3L-1600	-	
			2/4	i7-7600U	2.8GHz	4MB	15W	Intel® HD Graphics 620			-	
			2/4	i7-7567U	3.5GHz	4MB	28W	Intel® Iris™ Plus Graphics 650			-	
			2/4	i7-7560U	2.4GHz	4MB	15W	Intel® Iris™ Plus Graphics 640			-	
			2/4	i7-7500U	2.70 GHz	4MB	15 W	Intel® HD Graphics 620			-	
			Core™ i5	2/4	i5-7360U	2.3GHz	4MB	15W			Intel® Iris™ Plus Graphics 640	-
				2/4	i5-7300U	2.6GHz	3MB	15W			Intel® HD Graphics 620	-
				2/4	i5-7287U	3.3GHz	4MB	28W			Intel® Iris™ Plus Graphics 650	-
				2/4	i5-7267U	3.1GHz	4MB	28W			Intel® Iris™ Plus Graphics 640	-
				2/4	i5-7260U	2.2GHz	4MB	15W			Intel® Iris™ Plus Graphics 640	-
				2/4	i5-7200U	2.50 GHz	3MB	15W			Intel® HD Graphics 620	-
			Core™ i3	2/4	i3-8130U	2.20 GHz	4MB	15W			Intel® HD Graphics 620	DDR4-2400, LPDDR3-2133
	2/4	i3-7130U		2.7GHz	3MB	15W	Intel® Iris™ Plus Graphics 650	-				
	2/4	i3-7167U		2.8GHz	3MB	28W	Intel® HD Graphics 620	-				
	2/4	i3-7100U		2.40 GHz	3MB	15W	Intel® HD Graphics 620	DDR4-2133, LPDDR3-1866, DDR3L-1600				
	Pentium®	2/4		4415U	2.3GHz	2MB	15W	Intel® HD Graphics 610	-			
	2/2	3965U		2.2GHz	2MB	15W	Intel® HD Graphics 610	-				
	FCBGA1356	Core™ i7	14nm Skylake	2/4	i7-6500U	2.50 GHz	4 MB	15 W	Intel® HD Graphics 520	300 MHz	DDR4-2133, LPDDR3-1866, DDR3L-1600	-
				2/4	i7-6560U	2.20 GHz	4 MB	15 W	Intel® Iris™ Graphics 540			-
				2/4	i7-6567U	3.30 GHz	4 MB	28 W	Intel® Iris™ Graphics 550			-
				2/4	i7-6600U	2.60 GHz	4 MB	15 W	Intel® HD Graphics 520			-
				2/4	i7-6660U	2.40 GHz	4 MB	15 W	Intel® Iris™ Graphics 540			-
				2/4	i7-6650U	2.20 GHz	4 MB	15 W	Intel® Iris™ Graphics 540			-
				2/4	i5-6287U	3.10 GHz	4 MB	28 W	Intel® Iris™ Graphics 550			-
2/4				i5-6267U	2.90 GHz	4 MB	28 W	Intel® Iris™ Graphics 540	-			
2/4				i5-6260U	1.80 GHz	4 MB	15 W	Intel® HD Graphics 520	-			
2/4				i5-6200U	2.30 GHz	3 MB	15 W	Intel® HD Graphics 520	-			
2/4				i5-6300U	2.40 GHz	3 MB	15 W	Intel® Iris™ Graphics 540	-			
2/4				i5-6360U	2.00 GHz	4 MB	15 W	Intel® Iris™ Graphics 540	-			
Core™ i3		2/4	i3-6006U	2.00 GHz	3 MB	15 W	Intel® HD Graphics 520	-				
		2/4	i3-6167U	2.70 GHz	3 MB	28 W	Intel® Iris™ Graphics 550	-				
		2/4	i3-6157U	2.40 GHz	3 MB	28 W	Intel® HD Graphics 520	-				
		2/4	i3-6100U	2.30 GHz	3 MB	15 W	Intel® HD Graphics 520	-				
		Pentium®	2/4	4405U	2.10 GHz	2 MB	15 W	Intel® HD Graphics 510	DDR4-1866/2133, LPDDR3-1600/1866			
		2/2	3855U	1.60 GHz	2 MB	15 W	Intel® HD Graphics 510	DDR4-1866/2133, LPDDR3-1600/1866, DDR3L-1333/1600				
FCBGA1168		Core™ i7	14nm Broadwell	2/4	i7-5650U	2.2 GHz	4 MB	15 W	Intel® HD Graphics 6000	300 MHz	DDR3L 1333/1600, LPDDR3 1600/1866	-
				2/4	i5-5350U	1.8 GHz	3 MB	15 W	Intel® HD Graphics 5500	300 MHz	DDR3L 1333/1600, LPDDR 1333/1600	-
				2/4	i3-5010U	2.1 GHz	3 MB	15 W	Intel® HD Graphics 5000	200 MHz	DDR3L 1333/1600, LPDDR3 1333/1600	-
		Core™ i5	22nm Haswell	2/2	3765U	1.9 GHz	2 MB	15 W	Intel® HD Graphics 4400	200 MHz	DDR3L 1333/1600, LPDDR3 1333/1600	-
				2/4	i7-4650U	1.7 GHz	4 MB	15 W	Intel® HD Graphics 5000	200 MHz	-	
				2/4	i5-4300U	1.9 GHz	3 MB	15 W	Intel® HD Graphics 4400	200 MHz	-	
	2/4			i3-4010U	1.7 GHz	3 MB	15 W	Intel® HD Graphics 4400	200 MHz	-		
	2/2			2980U	1.6 GHz	2 MB	15 W	Intel® HD Graphics	200 MHz	-		
	2/2			3955U	2.00 GHz	2 MB	15 W	Intel® HD Graphics	200 MHz	-		

Yellow means long-term support \*HM65/HM55 chipset doesn't support Intel® AMT feature



# Mobile Core™ i7/i5/i3/Celeron® CPU List

Supported Sockets	Brand	Process	Cores/Threads	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset	
FCLGA1151	Xeon® E	14nm Coffee Lake refresh	8/16	E-2288G	3.70 GHz	16MB	95W	Intel® UHD Graphics P630	350MHz	DDR4-2666	C246	
			6/12	E-2286G	4.00 GHz	12MB	95W	N/A	N/A		C240	
			8/16	2278GE	3.30 GHz	16MB	80W	Intel® UHD Graphics P630	350MHz		C246	
			8/16	2278GEL	2.00 GHz	16MB	35W	N/A	N/A		C240	
			8/16	E-2278G	3.40 GHz	16MB	80W	Intel® UHD Graphics P630	350MHz		C246	
			6/12	E-2276G	3.80 GHz	12MB	80W	N/A	N/A		C240	
			4/8	E-2274G	4.00 GHz	8MB	83W	Intel® UHD Graphics P630	350MHz		C246	
			6/12	E-2246G	3.60 GHz	12MB	80W	N/A	N/A		C240	
			4/8	E-2244G	3.80 GHz	8MB	71W	Intel® UHD Graphics P630	350MHz		C246	
			6/12	E-2236	3.40 GHz	12MB	80W	N/A	N/A		C240	
			4/8	E-2234	3.60 GHz	8MB	71W	Intel® UHD Graphics P630	350MHz		C246	
			6/6	E-2226G	3.40 GHz	12MB	80W	Intel® UHD Graphics P630	350MHz		C240	
6/6	E-2226GE	3.40 GHz	12MB	80W	N/A	N/A	C240					
4/4	E-2224	3.40 GHz	8MB	71W	Intel® UHD Graphics P630	350 MHz	DDR4-2666, LPDDR3-2133	CM246				
FCBGA1440	Xeon® E	14nm Coffee lake	6/12	E-2186M	2.90 GHz	12MB	45W	Intel® UHD Graphics P630	350 MHz	DDR4-2666, LPDDR3-2133	CM246	
			6/12	E-2176M	2.70 GHz	12MB	45W	Intel® HD Graphics P630				
	Xeon® E3	14nm Kabylake	4/8	E3-1535MV6	3.10 GHz	8 MB	45 W	Intel® HD Graphics P630		350 MHz	DDR4-2400, LPDDR3-2133, DDR3L-1600	CM236
			4/8	E3-1505LV6	3.00 GHz	8 MB	45 W					
			4/8	E3-1505LV6	2.20 GHz	8 MB	25 W					
			4/4	E3-1501LV6	2.10 GHz	6 MB	25 W					
	Xeon® E3	14nm Skylake	4/4	E3-1501MV6	2.90 GHz	6 MB	45 W	Intel® Iris™ Pro Graphics P580		350 MHz	DDR4-2400	CM236
			4/8	E3-1575MV5	3.00 GHz	8 MB	45 W					
			4/8	E3-1545MV5	2.90 GHz	8 MB	45 W					
			4/8	E3-1535MV5	2.90 GHz	8 MB	45 W					
	Xeon® E3	14nm Skylake	4/8	E3-1515MV5	2.80 GHz	8 MB	45 W	Intel® HD Graphics P530		350 MHz	DDR4-2133, LPDDR3-1866, DDR3L-1600	CM236
			4/8	E3-1515MV5	2.80 GHz	8 MB	45 W	Intel® Iris™ Pro Graphics P580				
4/8			E3-1505MV5	2.80 GHz	8 MB	45 W	Intel® HD Graphics P530					
4/8			E3-1505MV5	2.80 GHz	8 MB	45 W	Intel® HD Graphics P530					
FCBGA1440	Core™ i9	14nm Coffee lake	6/12	i9-8950HK	2.90 GHz	12MB	45W	Intel® UHD Graphics 630	350 MHz	DDR4-2666, LPDDR3-2133	CM246	
			6/12	i7-8850H	2.60 GHz	9MB	45W					
	Core™ i7		6/12	i7-8750H	2.20 GHz	9MB	45W					
			6/12	i7-8700B	3.20 GHz	12MB	65W					
	Core™ i5		6/6	i5-8500B	3.00 GHz	9MB	65W					
			4/8	i5-8400H	2.50 GHz	8MB	45W					
	Core™ i5		6/6	i5-8400B	2.80 GHz	9MB	65W					
			4/8	i5-8300H	2.30 GHz	8MB	45W					
Core™ i3	4/4	i3-8100H	3.00 GHz	6MB	35W							
FCBGA1440	Core™ i7	14nm Kabylake	4/8	i7-7920HQ	3.10 GHz	8 MB	45W	Intel® HD Graphics 630	350MHz	DDR4-2400, LPDDR3-2133, DDR3L-1600	CM236	
			4/8	i7-7820HQ	2.90 GHz	8 MB	45W					
			4/8	i7-7820HK	2.90 GHz	8 MB	45W					
			4/8	i7-7820EQ	3.00 GHz	8 MB	45W					
	Core™ i5		4/8	i7-7700HQ	2.80 GHz	6 MB	45W					
			4/4	i5-7442EQ	2.10 GHz	6 MB	25W					
			4/4	i5-7440HQ	2.80 GHz	6 MB	45W					
			4/4	i5-7440EQ	2.90 GHz	6 MB	45W					
	Core™ i5		4/4	i5-7300HQ	2.50 GHz	6 MB	45W					
			2/4	i3-7102E	2.10 GHz	3 MB	25W					
			2/4	i3-7100E	2.90 GHz	3 MB	35W					
			Core™ i3	2/4	i3-7100E	2.90 GHz	3 MB			35W		
FCBGA1440	Core™ i7	14nm Skylake	4/8	i7-6820EQ	2.80 GHz	8 MB	45 W	Intel® HD Graphics 530	350 MHz	DDR4-2133, LPDDR3-1866, DDR3L-1600	QM170/HM170	
			4/8	i7-6822EQ	2.00 GHz	8 MB	25 W					
			4/8	i7-6700HQ	2.60 GHz	6 MB	45 W					
			4/8	i7-6770HQ	2.60 GHz	6 MB	45 W					
			4/8	i7-6820HK	2.70 GHz	8 MB	45 W					
			4/8	i7-6820HQ	2.70 GHz	8 MB	45 W					
			4/8	i7-6870HQ	2.70 GHz	8 MB	45 W					
			4/8	i7-6870HQ	2.70 GHz	8 MB	45 W					
			4/8	i7-6920HQ	2.90 GHz	8 MB	45 W					
			4/8	i7-6970HQ	2.80 GHz	8 MB	45 W					

Yellow means long-term support

\*HM65/HM55 chipset doesn't support Intel® AMT feature

# Mobile Core™ i7/i5/i3/Celeron® CPU List

Supported Sockets	Brand	Process	Cores/Threads	Package Type	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset			
FCBGA1440	Core™ i5	14nm Skylake	4/4	-	i5-6442EQ	1.90 GHz	6 MB	25 W	Intel® HD Graphics 530	350 MHz	DDR4-2133, LPDDR3-1866, DDR3L-1600	QM170/HM170			
			4/4	-	i5-6440EQ	2.70 GHz	6 MB	45 W							
			4/4	-	i5-6300HQ	2.30 GHz	6 MB	45 W							
			4/4	-	i5-6350HQ	2.30 GHz	6 MB	45 W	Intel® Iris™ Pro Graphics 580						
	Core™ i3		2/4	-	i3-6102E	1.90 GHz	3 MB	25 W	Intel® HD Graphics 530						
			2/4	-	i3-6100E	2.70 GHz	3 MB	35 W							
			2/4	-	i3-6100H	2.70 GHz	3 MB	35 W							
			2/2	-	G3900E	2.40 GHz	2 MB	35 W			Intel® HD Graphics 510				
Celeron®	2/2	-	G3902E	1.60 GHz	2 MB	25 W			DDR4-1866/2133, DDR3L-1333/1600 @ 1.35V						
FCBGA1364	Core™ i7	22nm Haswell	4/8	-	i7-4700EC	2.7 GHz	8 MB	43 W	Intel® HD Graphics 4600	400 MHz	DDR3L 1333/1600	QM87/HM86			
			4/8	-	i7-4700EQ	2.4 GHz	6 MB	47 W		400 MHz					
			4/8	-	i7-4702EC	2 GHz	8 MB	27 W	None	400 MHz					
	Core™ i5		2/4	-	i5-4422E	1.8 GHz	3 MB	25 W	Intel® HD Graphics 4600	400 MHz					
			2/4	-	i5-4410E	2.9 GHz	3 MB	37 W		400 MHz					
			2/4	-	i5-4402EC	2.5 GHz	4 MB	27 W	None	-					
			2/4	-	i5-4402E	1.6 GHz	3 MB	25 W		400 MHz					
	Core™ i3		2/4	-	i5-4400E	2.7 GHz	3 MB	37 W		400 MHz					
			2/4	-	i3-4100E	2.4 GHz	3 MB	37 W	Intel® HD Graphics 4600	400 MHz					
			2/4	-	i3-4102E	1.6 GHz	3 MB	25 W		400 MHz					
			2/4	-	i3-4110E	2.6 GHz	3 MB	37 W		400 MHz					
	Celeron®		2/4	-	i3-4112E	1.8 GHz	3 MB	25 W		400 MHz					
			2/2	-	2002E	1.5 GHz	2 MB	25 W	Intel® HD Graphics	400 MHz					
			2/2	-	2000E	2.2 GHz	2 MB	37 W		400 MHz					
	rPGA988B		Core™ i7 Extreme Edition	22nm Ivy Bridge	4/8	PGA	i7-3940XM	3 GHz	8 MB	55 W			-	1.35 GHz	DDR3/L/-RS 1333/1600
4/8		i7-3920XM			2.9 GHz		8 MB	55 W	-	1.3 GHz					
Core™ i7 Extreme Edition		32nm Sandy Bridge	4/8	i7-2960XM	2.7 GHz		8 MB	55 W	-	1.3 GHz	DDR3-1066/1333/1600				
			4/8	i7-2920XM	2.5 GHz		8 MB	55 W	-	1.3 GHz					
Core™ i7		22nm Ivy Bridge	4/8	i7-3840QM	2.8 GHz		8 MB	45 W	-	1.3 GHz	DDR3/L/-RS 1333/1600	QM77/QM67/HM65			
			4/8	i7-3820QM	2.7 GHz		8 MB	45 W	-	1.25 GHz					
			4/8	i7-3740QM	2.7 GHz		6 MB	45 W	-	1.3 GHz					
			4/8	i7-3720QM	2.6 GHz		6 MB	45 W	-	1.25 GHz					
			4/8	i7-3632QM	2.2 GHz		6 MB	35 W	-	1.15 GHz					
			4/8	i7-3630QM	2.4 GHz		6 MB	45 W	-	1.15 GHz					
			4/8	i7-3612QM	2.1 GHz		6 MB	35 W	-	1.1 GHz					
			4/8	i7-3610QM	2.3 GHz		6 MB	45 W	-	1.1 GHz					
			4/8	i7-3610QE	2.3 GHz		6 MB	45 W	-	1.0 GHz			DDR3/L 1333/1600		
			2/4	i7-3520M	2.9 GHz		4 MB	35 W	-	1.25 GHz			DDR3/L/-RS 1333/1600		
			Core™ i5	32nm Sandy Bridge	4/8		i7-2860QM	2.5 GHz	8 MB	45 W			-	1.3 GHz	DDR3-1066/1333/1600
					4/8		i7-2820QM	2.3 GHz	8 MB	45 W			-	1.3 GHz	
					4/8		i7-2760QM	2.4 GHz	6 MB	45 W			-	1.3 GHz	
					4/8		i7-2720QM	2.2 GHz	6 MB	45 W			-	1.3 GHz	
4/8		i7-2710QE			2.1 GHz		6 MB	45 W	-	1.2 GHz					
4/8		i7-2670QM			2.2 GHz		6 MB	45 W	-	1.1 GHz					
2/4		i7-2640M			2.8 GHz		4 MB	35 W	-	1.3 GHz					
4/8		i7-2630QM			2 GHz		6 MB	45 W	-	1.1 GHz					
Core™ i5		22nm Ivy Bridge	2/4	i7-2620M	2.7 GHz		4 MB	35 W	-	1.3 GHz	DDR3/L 1333/1600	QM77/QM67/HM65			
			2/4	i5-3610ME	2.7 GHz		3 MB	35 W	-	950 MHz					
			2/4	i5-3360M	2.8 GHz		3 MB	35 W	-	1.2 GHz					
			2/4	i5-3320M	2.6 GHz		3 MB	35 W	-	1.2 GHz					
Core™ i5		32nm Sandy Bridge	2/4	i5-3210M	2.5 GHz		3 MB	35 W	-	1.1 GHz	DDR3/L/-RS 1333/1600				
			2/4	i5-2540M	2.6 GHz		3 MB	35 W	-	1.3 GHz					
			2/4	i5-2520M	2.5 GHz		3 MB	35 W	-	1.3 GHz					
			2/4	i5-2510E	2.5 GHz		3 MB	35 W	-	1.1 GHz					
			2/4	i5-2450M	2.5 GHz		3 MB	35 W	-	1.3 GHz					
			2/4	i5-2435M	2.4 GHz		3 MB	35 W	-	1.3 GHz					
	2/4		i5-2430M	2.4 GHz	3 MB	35 W	-	1.2 GHz							
	2/4		i5-2410M	2.3 GHz	3 MB	35 W	-	1.2 GHz							

Yellow means long-term support \*HM65/HM55 chipset doesn't support Intel® AMT feature

# Mobile Core™ i7/i5/i3/Celeron® CPU List

Supported Sockets	Brand	Process	Cores/Threads	Package Type	Processor Number	Processor Base Frequency	Cache	TDP	Processor Graphics	Graphics Base Frequency	Memory Types	Chipset				
rPGA988B	Core™ i3	22nm Ivy Bridge	2/4	PGA	i3-3120M	2.5 GHz	3 MB	35 W	-	1.1 GHz	DDR3/L/-RS 1333/1600	QM77/ QM67/ HM65				
			2/4		i3-3110M	2.4 GHz	3 MB	35 W	-	1 GHz						
	Core™ i3	32nm Sandy Bridge	2/4		i3-2370M	2.4 GHz	3 MB	35 W	-	1.15 GHz	DDR3-1066/1333					
			2/4		i3-2350M	2.3 GHz	3 MB	35 W	-	1.15 GHz						
			2/4		i3-2330M	2.2 GHz	3 MB	35 W	-	1.1 GHz						
			2/4		i3-2330E	2.2 GHz	3 MB	35 W	-	1.05 GHz						
			2/4		i3-2328M	2.2 GHz	3 MB	35 W	-	1.1 GHz						
			2/4		i3-2312M	2.1 GHz	3 MB	35 W	-	1.1 GHz						
			2/4		i3-2310M	2.1 GHz	3 MB	35 W	-	1.1 GHz						
			Celeron®		32nm Sandy Bridge	2/2	B840	1.9 GHz	2 MB	35 W			-	1 GHz		
	2/2	B830				1.8 GHz	2 MB	35 W	-	1.05 GHz						
	2/2	B820				1.7 GHz	2 MB	35 W	-	1.05 GHz						
	2/2	B815				1.6 GHz	2 MB	35 W	-	1.05 GHz						
	2/2	B810				1.6 GHz	2 MB	35 W	-	950 MHz						
	2/2	B800				1.5 GHz	2 MB	35 W	-	1 GHz						
	1/1	B720				1.7 GHz	2 MB	35 W	-	1 GHz						
	1/1	B710				1.6 GHz	1.5 MB	35 W	-	1 GHz						
	Socket988A	Core i7 Extreme Edition				45nm	Quad	i7-940XM	2.13G	8M	55W		-	-	1333 MHz 1066 MHz	QM57/ HM55
								i7-920XM	2.0G	8M	55W		-	-		
		Core i7	i7-840QM		1.86G			8M	45W	-	-					
i7-820QM			1.73G	8M	45W			-	-							
i7-740QM			1.73G	6M	45W			-	-							
i7-720QM			1.6G	6M	45W			-	-							
Core i5		Dual	i7-640M	2.8G	4M		35W	-	-							
			i7-620M	2.66G	4M		35W	-	-							
			i5-580M	2.66G	3M		35W	-	-							
			i5-560M	2.66G	3M		35W	-	-							
			i5-540M	2.53G	3M		35W	-	-							
			i5-520M	2.4G	3M		35W	-	-							
			i5-480M	2.66G	3M		35W	-	-							
			i5-460M	2.53G	3M		35W	-	-							
			i5-450M	2.4G	3M		35W	-	500MHz							
			i5-430M	2.26G	3M		35W	-	1066 MHz 800 MHz							
			Core i3	i3-390M	2.66G		3M	35W	-	-						
				i3-380M	2.53G		3M	35W	-	-						
i3-370M		2.4G		3M	35W		-	-								
i3-350M		2.26G		3M	35W		-	-								
Celeron		i3-330M	2.13G	3M	35W		-	-								
		P4600	2.0G	2M	35W		-	-								
		P4500	1.86G	2M	35W		-	-								

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# » TANK AIoT Developer Kit



Model		TANK AIoT Dev. Kit
Chassis	Color	Black C + Silver
	Dimensions (WxDxH)	121.5 x 255.2 x 205 mm (4.7" x 10" x 8")
	System Fan	Fan
	Chassis Construction	Extruded aluminum alloys
	Weight (Net/Gross)	4.2 kg (9.26 lbs)/ 6.3 kg (13.89 lbs)
Motherboard	CPU	Intel® Xeon® E3-1268LV5 2.4GHz (up to 3.4 GHz, Quad Core, TDP 35W) Intel® Core™ i7-7700T 2.9GHz (up to 3.8 GHz, Quad Core, TDP 35W) Intel® Core™ i5-7500T 2.7GHz (up to 3.3 GHz, Quad Core, TDP 35W) Intel® Core™ i7-6700TE 2.4 GHz (up to 3.4GHz, quad-core, TDP 35W) Intel® Core™ i5-6500TE 2.3 GHz (up to 3.3GHz, quad-core, TDP 35W)
	Chipset	Intel® Q170/C236 with Xeon® E3 only
	System Memory	2 x 260-pin DDR4 SO-DIMM, 8 GB pre-installed (for i5/i5KBL/i7 sku) 16 GB pre-installed (for i7KBL sku) 32 GB pre-installed (for E3 sku)
Storage	Hard Drive	2 x 2.5" SATA 6Gb/s HDD/SSD bay, RAID 0/1 support (1x 2.5" 1TB HDD pre-installed)
I/O Interfaces	USB 3.2 Gen 1	4
	USB 2.0	4
	Ethernet	2 x RJ-45 LAN1: Intel® I219LM PCIe controller with Intel® vPro™ support LAN2 (iRIS): Intel® I210 PCIe controller
	COM Port	4 x RS-232 (2 x RJ-45, 2 x DB-9 w/2.5KV isolation protection) 2 x RS-232/422/485 (DB-9)
	Digital I/O	8-bit digital I/O, 4-bit input / 4-bit output
	Display	1 x VGA 1 x HDMI/DP 1 x iDP (optional)
	Resolution	VGA: Up to 1920 x 1200@60Hz HDMI/DP: Up to 3840x2160@30Hz / 4096x2304@60Hz
	Audio	1 x Line-out, 1 x Mic-in
	TPM	1x Infineon TPM 2.0 Module
	Backplane	2 x PCIe x8
Expansions	PCIe Mini	1 x Half-size PCIe Mini slot 1 x Full-size PCIe Mini slot (supports mSATA, colay with SATA)
	Power Input	DC Jack: 9 V~36 V DC Terminal Block: 9 V~36 V DC
Power	Power Consumption	19 V@3.68 A (Intel® Core™ i7-6700TE with 8 GB memory)
	Internal Power output	5V@3A or 12V@3A
	Mounting	Wall mount
Reliability	Operating Temperature	Xeon® E3 -20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing i7-7700T -20°C ~ 35°C with air flow (SSD), 10% ~ 95%, non-condensing i5-7500T -20°C ~ 45°C with air flow (SSD), 10% ~ 95%, non-condensing i7-6700TE -20°C ~ 45°C with air flow (SSD), 10% ~ 95%, non-condensing i5-6500TE -20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing
	Operating Vibration	MIL-STD-810G 514.6 C-1 (with SSD)
	Safety/EMC	CE/FCC/RoHS
	Supported OS	Win10/Linux Ubuntu 16.04 LTS

# » FLEX-BX100-ULT5



Model	FLEX-BX100-ULT5
CPU	8th Generation Intel® Core™ i5-8365U 4.10GHz 8th Generation Intel® Celeron® 4205U 2.00GHz
Memory	2 x 260-pin 2400 MHz dual-channel DDR4 unbuffered SO-DIMM supporting up to 32GB
Graphics Engine	Intel® HD Graphics Gen 9 Engines with Low power 16 execution unit, 4K Codec Decode
Ethernet	Intel® I211/I219 controller
Storage	2.5" HDD/SSD SATA 6 Gb/s bay
I/O Ports and Switches	4 x USB 3.2 Gen 2 (10Gbps) 1 x HDMI output 1 x RS-232/422/485 1 x RS-232 3 x GbE LAN (2 for IEEE802.3 PoE PD GbE LAN) 1 x 12V DC Jack 1 x Power switch with LED indicator (blue) 1 x AT/ATX switch 1 x Line-out 1 x Reset button
Expansion Slots	1 x NGFF M.2 2230 A Key (PCIex1, USB signal) 1 x NGFF M.2 2280 M Key (support PCIe GEN.3 x4 NVMe) 2 x PoE PD module socket (by IEI pin definition)
Thermal Solution	Fanless
Watchdog Timer	Software Programmable support 1~255 sec. System reset
Dimensions (mm) (W x H x D)	356.5 x 222 x 44
Net Weight (kgs)	3/TBD
Color	PANTONE 296 C
Front Frame	Aluminum
Rear Cover	Sheet Metal
Mouting	Wall mount
Operating Temp.	-10°C ~ 60°C (with air flow)
Storage Temp.	-20°C ~ 70°C
Humidity	10% ~ 95% (non-condensing)
Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak
shock	10G acceleration part to part (11ms)
Power input	DC input 12V



## » FLEX-BX200-Q370



Model		FLEX-BX200-Q370
System	CPU	8th Generation Intel® Core™ i7/i5/i3 processors in the LGA 1151 package (Please choose the TDP of the the processor under 65W)
	Chipset	Intel® 300 Series Chipsets Q370 (Coffee Lake)
	Memory	2 x 288-pin 2666/2400 MHz dual-channel DDR4 unbuffered DIMM supporting up to 64GB
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with Low power 16 execution unit, supports DX2015, OpenGL 5.X and OpenCL2.x, ES 2.0
	Ethernet	Intel® I211 controller
Storage	4 x accessible 2.5" HDD/SSD SATA 6 Gb/s bay (with RAID 0/1/5/10 support) with LED indicator 2 x NGFF M.2(2280) M Key socket (support NVMe SSD)	
I/O Ports and Switches	1 x HDMI output 2 x GbE LAN 6 x USB 3.2 Gen 1 (5Gb/s) Type-A 2 x RS-232 DB-9 type 1 x Mic in 1 x Line out 1 x AC Inlet Power button with power LED (power on=Blue) AT/ATX mode switch Reset button	
Expansion Slots	2 x PCIe 3.0 by 8 (by 16 slot) 2 x PCIe 3.0 by 4 (Maximum card size supported: 68 mm x 167 mm)	
Thermal Solution	System Fan x3, CPU Cooler x1	
Power supply	AC input ATX power supply 1. 250W power supply - Input: 115VAC~230VAC, 50/60Hz - Output (Max.): 3.3V@12A, 5V@14A, 12V@25A, -12V@0.3A,+5Vsb@3A 2. 350W power supply (Build to Order) - Input: 115VAC~264VAC, 50/60Hz - Output (Max.): 3.3V@14A, 5V@16A, 12V@29A, -12V@0.3A,+5Vsb@3A -Efficiency: Full load (100%) 87%, Typical load (50%) 90%, Light load (20%) 87%	
Watchdog Timer	Software Programmable support 1~255 sec. System reset	
Construction	Chassis Construction	Metal Housing
	Mounting	Wall and Rack Mount
	Color	Black
	Dimensions (LxDxH) (mm)	357 x 230 x 88
	Weight (kg) Net/Gross	4/6
Environmental	Operating Temperature	-20°C ~ 50°C (with SSD and TDP 65W processor) -20°C ~ 40°C (with HDD or add-on cards without fan)
	Storage Temperature	-20°C ~ 60°C
	Operating Humidity	5% ~95%, non-condensing
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak
	shock	10G acceleration part to part (11ms)

## » FLEX-BX200-C246



Model		FLEX-BX200-C246
System	CPU	Intel® Xeon® E-2176G Processor in the LGA 1151 package
	Chipset	Intel® C240 Series Chipsets C246 (Coffee Lake)
	Memory	2 x 288-pin 2666/2400 MHz dual-channel DDR4 SDRAM ECC and non-ECC unbuffered DIMMs support up to 64 GB
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with Low power 16 execution unit, supports DX2015, OpenGL 5.X and OpenCL2.x, ES 2.0
	Ethernet	Intel® I211 controller
Storage	4 x accessible 2.5" HDD/SSD SATA 6 Gb/s bay (with RAID 0/1/5/10 support) with LED indicator 2 x NGFF M.2(2280) M Key socket (support NVMe SSD)	
I/O Ports and Switches	1 x HDMI output 2 x GbE LAN 6 x USB 3.2 Gen 1 (5Gb/s) Type-A 2 x RS-232 DB-9 type 1 x Mic in 1 x Line out 1 x AC Inlet Power button with power LED (power on=Blue) AT/ATX mode switch Reset button	
Expansion Slots	2 x PCIe 3.0 by 8 (by 16 slot) 2 x PCIe 3.0 by 4 (Maximum card size supported: 68 mm x 167 mm)	
Thermal Solution	System Fan x3, CPU Cooler x1	
Power supply	AC input ATX power supply - 350W Power supply - Input: 90VAC~264VAC, 50/60Hz - Output (Max.): 3.3V@14A, 5V@16A, 12V@29A, -12V@0.3A -Efficiency: Full load (100%) 87%, Typical load (50%) 90%, Light load (20%) 87%	
Watchdog Timer	Software Programmable support 1~255 sec. System reset	
Construction	Chassis Construction	Metal Housing
	Mounting	Wall and Rack Mount
	Color	Black
	Dimensions (LxDxH) (mm)	357 x 230 x 88
	Weight (kg) Net/Gross	4/6
Environmental	Operating Temperature	-20°C ~ 40°C (with SSD and TDP 80W processor)
	Storage Temperature	-20°C ~ 60°C
	Operating Humidity	5% ~95%, non-condensing
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak
	shock	10G acceleration part to part (11ms)

## » RACK-500AI-C246



Model		RACK-500AI-C246
Chassis	Color	Navy blue and black
	Dimensions (WxDxH)	440.2 mm x 110.6 mm x 221.3 mm
	System Fan	System Fan & CPU Fan
	Chassis Construction	Heavy duty metal
Motherboard	CPU	Intel® Xeon® E-2176G CPU (3.70 GHz, Hexa Core, TDP 80W)
	Chipset	Intel® C246
	System Memory	Four 288-pin 2666MHz dual-channel DDR4 SDRAM unbuffered DIMMs support up to 64GB ECC & non-ECC (2 x 8G Pre-installed)
	Display Output	Dual display supported 1 x HDMI (up to 4096 x 2304@30Hz) 1 x Internal DisplayPort (up to 4096 x 2304@60Hz)
Storage	Hard Drive	1x 3.5" 6 Gb/s SATA removable drive Bay (Hot swap)
	M.2	1 x 2280 M key (PCIe x4)
I/O interfaces	Ethernet	LAN1: Intel® I219LM PHY LAN2: Intel® I211-AT PCIe controller (Co-lay I210-AT)
	USB 3.2	2 x Internal USB 3.2 Gen1 (2x10 pin)
	USB 2.0	6 (pin header)
	RS-232	3 (pin header)
	RS-422/485	1 (1x4 pin, P=2.0)
	Expansion	1 x PCIe Gen3 x16 slot 1 x PCIe Gen3 x4 slot **If use 2 slots capacity PCIe add-on Cards (maximum length 338mm) need to change cooler (P/N: 19100-000238-00-RS)
Power	Power Input	ATX Power (350W)
Reliability	Mounting	Rack mount
	Operating Temperature	-20°C~+50°C
	Storage Temperature	-30°C~+60°C
	Relative Humidity	10% ~ 95%, non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis
	Operation Vibration	MIL-STD-810G 514.6C-1
	Weight (Net/Gross)	8 kg/11 kg
	Safety/EMC	CE/FCC
OS	Supported OS	Microsoft® Windows® 10, Linux

## » PAC-400AI-C236



Model		PAC-400AI-C236
Chassis	Color	NAVY BLUE & BLACK
	Dimensions (WxDxH)	268.7mm x 140mm x 230.3mm
	System Fan	System Fan & CPU Fan
	Chassis Construction	Heavy duty metal
Motherboard	CPU	Intel® Xeon® E3-1275 v5 CPU (3.60 GHz, Quad Core, TDP 80W)
	Chipset	Intel® C236
	System Memory	Two 260-pin 1600/2133 MHz dual-channel DDR4 ECC and non-ECC unbuffered SODIMM support up to 32 GB (2 x 8GB Pre-installed)
	Display Output	1 x VGA (up to 1920x1200@60 Hz) 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
Storage	Hard Drive	1x 3.5" 6 Gb/s SATA removable drive Bay (Hot swap)
	MSATA	1
I/O interfaces	Ethernet	LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 support LAN2: Intel® I211 PCIe controller
	KB/MS	1 x (1x6 pin)
	USB 3.2	2 x USB 3.2 Gen1
	USB 2.0	2 x USB 2.0
	Expansion	1 x PCIe Gen3 x16 slot 1 x PCIe Gen3 x4 slot **PCIe Half Size Cards length support to maximum 169mm
	Power	Power Input
Reliability	Mounting	Wall mount
	Operating Temperature	0°C~+50°C
	Storage Temperature	0°C~+60°C
	Relative Humidity	10% ~ 95%, non-condensing
	Weight ( Net/Gross)	6 kg/7.8 kg
	Safety/EMC	CE/FCC
OS	Supported OS	Microsoft® Windows® 10, Linux

## » GRAND-C422-20D-S



Model		GRAND-C422-20D-S
Chassis	Dimensions (H x W x D)	176.15 x 480.94 x 644 mm
	System Fan	2 x 120 mm, 12V DC
	Chassis Construction	4U, Rackmount
Motherboard	CPU	Intel® LGA-2066 Xeon® W Family processor
	Processor Cooling	Water cooling system
	Chipset	C422
	Memory	Total slot: 4 x DDR4 ECC RDIMM / LRDIMM Memory expandable up to:256GB (4 x 64GB)
Security	TPM	1 x TPM 2.0 Pin header
IPMI	IPMI Solution	IPMI LAN port, IPMI VGA display
Storage	Hard Drive	12 x 2.5" / 3.5" drive bay 8 x 2.5" drive bay
	M.2	1 x 2280 M key (PCIe x4) built in on SBC
	U.2	2 x U.2 SSD drive bay compatible to SATA
Networking	Ethernet IC	1 GbE NIC: Intel® i210-AT with NCSI support 10 GbE NIC: Aquantia AQC107
I/O Interface	USB 3.2 Gen 1	4
	USB 2.0	2
	Ethernet	1 x 1GbE RJ-45 combo LAN ports / IPMI 1 x 10GbE RJ-45 LAN port
	Display	1 x IPMI VGA display
	Buttons	Power button
Internal I/O	COM port	2 x RS-232 pin header
	USB 3.2 Gen 1	2 x USB 3.2 Gen 1 (5Gb/s) pin header
	USB 2.0	2 x USB 2.0 pin header, 1 x USB 2.0 type A
Indicator	LEDs	10 GbE, Status, LAN, Storage Expansion Port Status
	LCM	LCM, 2 buttons
Expansion	PCIe	4 x PCIe Gen 3 x8 2 x PCIe Gen 3 x4
Power	Power Input	100-240V AC, 47-63Hz
	Power Consumption	In Operation: 285W
	Type/Watt	Redundant Power 1200W
Reliability	Operating Temperature	0~40°C
	Relative Humidity	5 to 95% non-condensing, wet bulb: 27°C
	Weight	23.59 kg
	Certification	CE/FCC
OS	Support OS	Windows server 2016 Linux

## » GRAND-C422-20D-H



Model		GRAND-C422-20D-H1	GRAND-C422-20D-H2
Chassis	Dimensions (H x W x D)	176.15 x 480.94 x 644 mm	
	System Fan	2 x 120 mm, 12V DC	
	Chassis Construction	4U, Rackmount	
Motherboard	CPU	Intel® LGA-2066 Xeon® W Family processor	
	Processor Cooling	Water cooling system	
	Chipset	C422	
	Memory	Total slot: 4 x DDR4 ECC RDIMM / LRDIMM Memory expandable up to:256GB (4 x 64GB)	
Security	TPM	1 x TPM 2.0 Pin header	
IPMI	IPMI Solution	IPMI LAN port, IPMI VGA display	
Storage	Hard Drive (need to install RAID card)	12 x 2.5" / 3.5" drive bay (support SAS /SATA) 8 x 2.5" drive bay (support SAS /SATA)	
	M.2	1 x M.2 (PCIe Gen 3 x4) built in on SBC	
	U.2	2 x U.2 SSD drive bay compatible to SATA	
Networking	Ethernet IC	1 GbE NIC: Intel® i210-AT with NCSI support 10 GbE NIC: Aquantia AQC107	
I/O Interface	USB 3.2 Gen 1	4	
	USB 2.0	2	
	Ethernet	1 x 1GbE RJ-45 combo LAN ports / IPMI 1 x 10GbE RJ-45 LAN port	
	Display	1 x IPMI VGA display	
	Buttons	Power button	
Internal I/O	COM port	2 x RS-232 pin header	
	USB 3.2 Gen 1	2 x USB 3.2 Gen 1 (5Gb/s) pin header	
	USB 2.0	2 x USB 2.0 pin header, 1 x USB 2.0 type A	
Indicator	LEDs	10 GbE, Status, LAN, Storage Expansion Port Status	
	LCM	LCM, 2 buttons	
Expansion	PCIe	2 PCIe Gen 3 x16 1 PCIe Gen 3 x8 3 PCIe Gen 3 x4	5 PCIe Gen 3 x8 2 PCIe Gen 3 x4
Power	Power Input	100-240V AC, 47-63Hz	
	Power Consumption	In Operation: 285W	
	Type/Watt	Redundant Power 1200W	
Reliability	Operating Temperature	0~40°C	
	Relative Humidity	5 to 95% non-condensing, wet bulb: 27°C	
	Weight	23.59 kg	
	Certification	CE/FCC	
OS	Support OS	Windows server 2016 / Linux	

## » Mustang-200



Model	Mustang-200
Main Chipset	Two (2) Intel Kabylake ULT CPU
	Intel® Core™ i7-7567U (28 W) (4M Cache, up to 4.00 GHz)
	Intel® Core™ i5-7267U (28 W) (4M Cache, up to 3.50 GHz)
	Intel® Celeron® 3865U (15W) (2M Cache, 1.80 GHz)
Processor Graphics	Intel® Core™ i7-7567U & i5-7267U support Iris™ Plus Graphics 650 (GT3e) •Graphics base frequency 300 MHz •Graphics max dynamic frequency: 1.05 GHz •Embedded graphics DRAM per GPU: 64 MB
	Intel® Celeron® 3865U supports Intel® HD Graphics 610 •Graphics base frequency 300 MHz •Graphics max dynamic frequency: 900 MHz
Hardware Video Decode	H.264, H.265/HEVC
	MPEG2, MJPEG
	VC-1
	VP8(8 bit)/VP9(10 bit)
Hardware Video Encode	H.264, H.265/HEVC
	MPEG2, MJPEG
	VC-1
	VP8 (8-bit)
Display Output	2 x Micro HDMI for debugging
USB 2.0	4 x USB 2.0 (pin header ) for debugging
Memory	(2 SO-DIMMs per CPU) 4 x DDR4 8GB SO-DIMM (Core™ i7/i5 SKU) 4 x DDR4 2GB SO-DIMM (Celeron® 3865U SKU)
Storage	2 x Intel® SSD 600P series (Core™ i7/i5 SKU only) (512GB M.2 80mm PCIe 3.0 x4, 3D1, TLC)
Dataplane Interface	PCI Express x4
	Compliant with PCI Express Specification V2.0
	Compatible with PCI Express x4, x8, and x16 slots
External Interfaces	Reset button
	Power button
Indicator	Seven segment (indicate card number and debug code)
Power Input	12V PCIe 6-pin power input
Power Consumption	12V@7.41A (Intel® Core™ i7-7567U SKU)
Operating Temperature	0°C~40°C
Fan	Dual fan
Dimensions (DxWxH)	40mm x 210mm x 111mm
Operating Humidity	10% ~ 90%

## » Mustang-F100-A10



Model	Mustang-F100-A10
Main FPGA	Intel® Arria® 10 GX1150 FPGA
Operating Systems	Ubuntu 16.04.3 LTS 64-bit, CentOS 7.4 64-bit Ubuntu 18.04.x LTS 64bit, CentOS 7.4 64bit, (Windows® 10 64bit & more OS are coming soon)
Voltage Regulator and Power Supply	Intel® Enpirion® Power Solutions
Memory	8G on board DDR4
Dataplane Interface	PCI Express x8
	Compliant with PCI Express Specification V3.0
Power Consumption	Approximate 40W
Operating Temperature	5°C~60°C
Cooling	Active fan
Dimensions	Standard Half-Height, Half-Length, Double-slot
Operating Humidity	5% ~ 90%
Power Connector	*Preserved PCIe 6-pin 12V external power
Dip Switch/LED indicator	Identify card number
Support Topology	AlexNet; DenseNet-121, -161, -169, -201; GoogLeNet v1, v2, v3, v4; Inception v1, v2, v3, v4; LSTM; CTPN MobileNet v1, v2; MobileNet SSD; MTCNN-o, -p, -r; ResNet-18, -50, -101, -152; ResNet v2-50, -101, -152 Sphereface; SqueezeNet v1.0, v1.1; SSD MobileNet v1, v2; SSD Inception v2, v3; SSD ResNet; SSD300 SSD512; U-Net; VGG16, VGG19; YoloTiny v1, v2, v3; Yolo v2, v3 * For more topologies support information please refer to Intel® OpenVINO™ Toolkit official website. [Supported Models] <a href="https://docs.openvino toolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW">https://docs.openvino toolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW</a> [Supported Framework Layers] <a href="https://docs.openvino toolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html">https://docs.openvino toolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html</a>

\*TANK AIoT dev. kit PCIe slot provides 75W power, this feature is preserved for user in case of different system configuration.  
Warning: DO NOT install the Mustang-F100-A10 into the TANK AIoT Dev. Kit before shipment. It is recommended to ship them with their original boxes to prevent the Mustang-F100-A10 from being damaged.



## » Mustang-V100-MX8



Model	Mustang-V100-MX8
Main Chip	Eight Intel® Movidius™ Myriad™ X MA2485 VPU
Operating Systems	Ubuntu 18.04.x 16.04.x LTS 64bit, CentOS 7.4 64bit, Windows® 10 64bit
Dataplane Interface	PCI Express x4
	Compliant with PCI Express Specification V2.0
Power Consumption	Approximate 25W
Operating Temperature	-20°C~60°C
Cooling	Active fan
Dimensions Standard	Half-Height, Half-Length, Single-slot PCIe
Operating Humidity	5% ~ 90%
Power Connector	*Preserved PCIe 6-pin 12V external power
Dip Switch/LED indicator	Identify card number
Support Topology	AlexNet, GoogleNetV1/V2, MobileNet SSD, MobileNetV1/V2, MTCNN, Squeezenet1.0/1.1, Tiny Yolo V1 & V2, Yolo V2, ResNet-18/50/101 * For more topologies support information please refer to Intel® OpenVINO™ Toolkit official website. [Supported Models] <a href="https://docs.openvino toolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW">https://docs.openvino toolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW</a> [Supported Framework Layers] <a href="https://docs.openvino toolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html">https://docs.openvino toolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html</a>

\*TANK AIoT dev. kit PCIe slot provides 75W power, this feature is preserved for user in case of different system configuration.

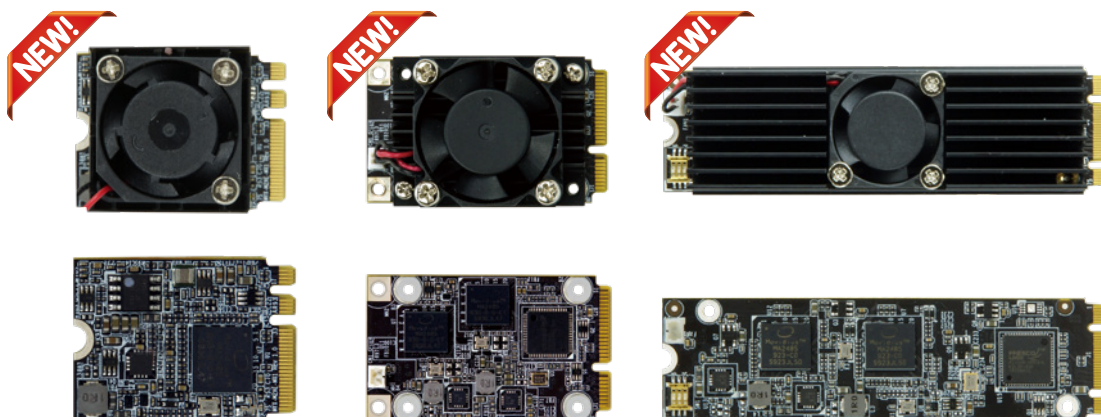
Warning: DO NOT install the Mustang-V100-MX8 into the TANK AIoT Dev. Kit before shipment. It is recommended to ship them with their original boxes to prevent the Mustang-V100-MX8 from being damaged.

## » Mustang-V100-MX4



Model	Mustang-V100-MX4
Main Chip	4 x Intel® Movidius™ Myriad™ X MA2485 VPU
Operating Systems	Ubuntu 18.04.x 16.04.x LTS 64bit, CentOS 7.4 64bit, Windows® 10 64bit
Dataplane Interface	PCIe Gen 2 x 2
Power Consumption	Approximate 15W
Operating Temperature	-20°C~60°C
Cooling	Active fan
Dimensions	113 x 56 x 23 mm
Operating Humidity	5% ~ 90%
Dip Switch/LED indicator	Identify card number
Support Topology	AlexNet, GoogleNetV1/V2, MobileNet SSD, MobileNetV1/V2, MTCNN, Squeezenet1.0/1.1, Tiny Yolo V1 & V2, Yolo V2, ResNet-18/50/101 * For more topologies support information please refer to Intel® OpenVINO™ Toolkit official website. [Supported Models] <a href="https://docs.openvino toolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW">https://docs.openvino toolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW</a> [Supported Framework Layers] <a href="https://docs.openvino toolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html">https://docs.openvino toolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html</a>

## Mustang Series



Model	Mustang-M2AE-MX1	Mustang-MPCIE-MX2	Mustang-M2BM-MX2
Main Chip	1 x Intel® Movidius™ Myriad™ X MA2485 VPU	2 x Intel® Movidius™ Myriad™ X MA2485 VPU	2x Intel® Movidius™ Myriad™ X MA2485 VPU
Operating Systems	Ubuntu 18.04.x 16.04.x LTS 64bit, CentOS 7.4 64bit, Windows® 10 64bit	Ubuntu 16.04.3 LTS 64bit, CentOS 7.4 64bit, Windows® 10 64bit	Ubuntu 18.04.x 16.04.x LTS 64bit, CentOS 7.4 64bit, Windows® 10 64bit
Dataplane Interface	M.2 AE Key	miniPCle	M.2 BM Key
Power Consumption	Approximate 4.5W	Approximate 7.5W	Approximate 7W
Operating Temperature	-20°C to 60°C	-20°C~60°C	-20°C~60°C
Cooling	Active Heatsink	Active Heatsink	Active Heatsink
Dimensions	22 x 30 mm	30 x 50 mm	22 x 80 mm
Operating Humidity	5% ~ 90%	5% ~ 90%	5% ~ 90%
Support Topology	AlexNet, GoogleNetV1/V2, MobileNet SSD, MobileNetV1/V2, MTCNN, Squeezenet1.0/1.1, Tiny Yolo V1 & V2, Yolo V2, ResNet-18/50/101 * For more topologies support information please refer to Intel® OpenVINO™ Toolkit official website. [Supported Models] <a href="https://docs.openvinotoolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW">https://docs.openvinotoolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW</a> [Supported Framework Layers] <a href="https://docs.openvinotoolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html">https://docs.openvinotoolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html</a>	AlexNet, GoogleNetV1/V2, MobileNet SSD, MobileNetV1/V2, MTCNN, Squeezenet1.0/1.1, Tiny Yolo V1 & V2, Yolo V2, ResNet-18/50/101 * For more topologies support information please refer to Intel® OpenVINO™ Toolkit official website. [Supported Models] <a href="https://docs.openvinotoolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW">https://docs.openvinotoolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW</a> [Supported Framework Layers] <a href="https://docs.openvinotoolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html">https://docs.openvinotoolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html</a>	AlexNet, GoogleNetV1/V2, MobileNet SSD, MobileNetV1/V2, MTCNN, Squeezenet1.0/1.1, Tiny Yolo V1 & V2, Yolo V2, ResNet-18/50/101 * For more topologies support information please refer to Intel® OpenVINO™ Toolkit official website. [Supported Models] <a href="https://docs.openvinotoolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW">https://docs.openvinotoolkit.org/latest/_docs_IE_DG_Introduction.html#SupportedFW</a> [Supported Framework Layers] <a href="https://docs.openvinotoolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html">https://docs.openvinotoolkit.org/latest/_docs_MO_DG_prepare_model_Supported_Frameworks_Layers.html</a>

# PUZZLE Series



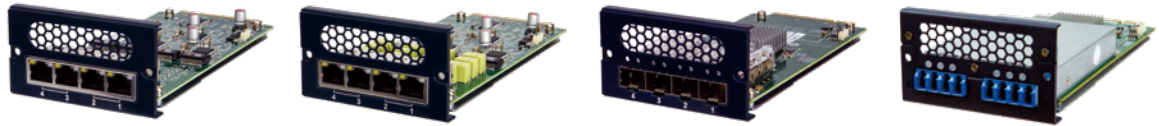
Model		PUZZLE-A001	PUZZLE-A002	PUZZLE-IN001/ PUZZLE-IN001A
Platform	Form Factor	1U	1U	1U
	CPU	AMD EPYC™ Embedded 3201 processor, 8C/8T, up to 3.10 GHz AMD EPYC™ Embedded 3151 processor, 4C/8T, up to 2.90 GHz	AMD R-Series RX-421ND processor, 4C, up to 3.4 GHz	Intel® Xeon® E-2136 Processor, 6C/12T, up to 4.50 GHz 8th Generation Intel® Core™ i3-8100T Processor, 4C/4T, up to 3.10 GHz
	Chipset	Integrated in CPU	Integrated in CPU	Intel® C246
Memory	Memory Technology	4 x DDR4 2666 MHz ECC or non-ECC UDIMM Support RDIMM	2 x DDR4 2400MHz Non-ECC UDIMM	2 x DDR4 2400MHz ECC/Non-ECC UDIMM 4 x DDR4 2400MHz ECC/Non-ECC UDIMM (PUZZLE-IN001A)
	Memory Capacity	UDIMM Up to 64GB RDIMM Up to 128GB	Up to 32GB	Up to 32GB Up to 64GB (PUZZLE-IN001A)
	Memory Socket	4 x 288-pin DIMM	2 x 288-pin DIMM	2 x 288-pin DIMM 4 x 288-pin DIMM (PUZZLE-IN001A)
Network and Security	Network Acceleration and Security Function	<ul style="list-style-type: none"> <li>Secure Processor for Crypto Co-processing</li> <li>Secure Memory Encryption (SME)</li> <li>Secure Encrypted Virtualization (SEV)</li> <li>Integrated crypto acceleration supporting the IPsec protocol</li> </ul>	<ul style="list-style-type: none"> <li>AES-NI encryption acceleration</li> <li>AMD Secure Processor</li> <li>Secure boot with AMD Hardware Validated Boot (HVB)</li> </ul>	<ul style="list-style-type: none"> <li>Intel® AES New Instructions</li> <li>Intel® Software Guard Extensions (Intel® SGX)</li> <li>Intel® Memory Protection Extensions (Intel® MPX)</li> <li>Intel® Trusted Execution Technology</li> </ul>
	TPM	1 x TPM 2.0 pin header	1 x TPM 2.0 pin header	1 x TPM 2.0 pin header
Networking	Ethernet IC	1 GbE NIC: Broadcom® BCM5720	1 GbE NIC: Broadcom® BCM5720	1 GbE NIC: Intel® i211-AT 8 x 5GbE NIC : AQC112C (PUZZLE-IN001A)
	Ethernet Port	8 x 1GbE RJ-45 LAN ports 4 x 10GbE SPF+ ports	6 x 1GbE RJ-45 LAN ports	8 x 1GbE RJ-45 LAN ports 8 x 5 GbE RJ-45 LAN ports (PUZZLE-IN001A)
	Network Module Slot	1 x PuIM module slot	N/A	2 x PuIM module slots
Expansion Slot	PCIe Slot	2 x PCIe x4 slots	2 x PCIe x4 slots	1 x PCIe x4 slot, 1 x PCIe x8 slot
	PCIe Mini Card Slot	1 x PCIe Mini card (PCIe, USB 2.0)	1 x PCIe Mini card (PCIe, USB 2.0, Micro SIM slot)	1 x PCIe Mini card (PCIe & SATA, USB 2.0)
	M.2	1 x 3042/2260 M.2 B key (SATA / USB 3.2 Gen1) Support SATA SSD and 4G LTE module	1 x 2230 M.2 A key (PCIe / USB 2.0)	1 x 3042/2260 M.2 B key (SATA / USB 3.2 Gen1) Support SATA SSD and 4G LTE module
Storage	Storage	2 x 2.5" SATA HDD/SSD bay	2 x 2.5" SATA HDD/SSD bay	2 x 2.5" SATA HDD/SSD bay
	eMMC	N/A	8GbE	N/A
External I/O	USB	2 x USB 3.2 Gen 1	2 x USB 3.2 Gen 1	2 x USB 3.2 Gen 1
	Console	1 x RJ-45	1 x RJ-45	1 x RJ-45
Internal I/O	M.2	1 x 3042/2260 M.2 B key (SATA / USB 3.2 Gen1)	1 x 2230 M.2 A key (PCIe / USB 2.0)	1 x 3042/2260 M.2 B key (SATA / USB 3.2 Gen1)
	HDMI	N/A	N/A	1 x HDMI connector (optional)
	USB	1 x USB USB 3.2 Gen 1 4 x USB 2.0	1 x USB USB 3.2 Gen 1 2 x USB 2.0	4 x USB 2.0 (pin header)
Power and Mechanical	Power Switch	1 x Power Switch	1 x Power Switch	1 x Power Switch
	Reset Button	1 x Reset Button	1 x Reset Button	1 x Reset Button
	Power Input	100 V ~ 240 V	100 V ~ 240 V	100 V ~ 240 V
	Type/Watt	Redundant Power 300W, 90V~264V AC	ATX Power 250W, 90V~264V AC	Redundant Power 300W, 90V~264V AC
	Processor Cooling	1 x Passive CPU Heatsink	1 x Passive CPU Heatsink	1 x Passive CPU Heatsink
	System Cooling	4 x Cooling fans with smart fan	4 x Cooling Fans with Smart Fan	4 x Cooling Fans with Smart Fan
	Antenna Port	1 x Antenna port	1 x Antenna port	1 x Antenna port
Physical and Environmental	Storage Temperature	0 ~ 40°C	0 ~ 40°C	0 ~ 40°C
	Operating Temperature	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)
	Operating Humidity	5% ~ 90% non-condensing	5% ~ 90% non-condensing	5% ~ 90% non-condensing
	Dimensions (W x H x D) (mm)	430 x 426 x 44.2	430 x 320 x 44.2	430 x 426 x 44.2
	Weight	7 kg	5 kg	7 kg
OS and Certifications	Certification	CE / FCC	CE / FCC	CE / FCC
	Operating System	Linux Ubuntu 16.04.04	Linux Ubuntu 16.04.04	Linux Ubuntu 16.04.04
Indicators	LCM	LCM, 2 buttons	LCM, 2 buttons	LCM, 2 buttons
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED

# PUZZLE Series



		PUZZLE-IN002	PUZZLE-IN003B	PUZZLE-IN004	PUZZLE-M801
Platform	Form Factor	1U	Desktop	1U	1U
	CPU	8th Generation Intel® Core™ i3-8100T Processor, 4C/4T, up to 3.10 GHz Intel® Pentium® Gold G5400T Processor, 2C/4T, up to 3.10 GHz	Intel® Atom® processor C3758 16M cache, up to 2.20 GHz Intel® Atom® processor C3558 8M cache, up to 2.20 GHz	Intel® Xeon® D-2145NT processor 11M cache, 1.90 GHz Intel® Xeon® D-2146NT processor 11M cache, 2.30 GHz Intel® Xeon® D-2166NT processor 16.5M cache, 2.00 GHz Intel® Xeon® D-2187NT processor 22M cache, 2.00 GHz	Marvell® ARMADA® 88F8040 High-Performance CPU System on Chip, 4C, 1.6GHz
Memory	Chipset	Intel® H310	Integrated in CPU	Integrated in CPU	Integrated in CPU
	Memory Technology	2 x DDR4 2400MHz Non-ECC UDIMM	DDR4 2133MHz ECC(By CPU) or non-ECC UDIMM, Support DDR4 RDIMM	DDR4 2666MHz ECC (By CPU) or non-ECC RDIMM	DDR4 2400MHz ECC/Non-ECC/ RDIMM
	Memory Capacity	Up to 32GB	UDIMM up to 64GB RDIMM up to 128GB	UDIMM up to 128GB RDIMM up to 258GB LRDIMM up to 512 GB	Up to 16GB
	Memory Socket	2 x 288-pin DIMM	4 x 288-pin DIMM	8 x 288-pin RDIMM	1 x 288-pin DIMM
Network and Security	Network Acceleration and Security Function	<ul style="list-style-type: none"> <li>Intel® AES New Instructions</li> <li>Intel® Software Guard Extensions (Intel® SGX)</li> <li>Intel® Memory Protection Extensions (Intel® MPX)</li> <li>Intel® Trusted Execution Technology</li> </ul>	<ul style="list-style-type: none"> <li>Intel® AES New Instructions</li> <li>Intel® Software Guard Extensions (Intel® SGX)</li> <li>Intel® Virtualization Technology for Directed I/O (VT-d)</li> <li>Intel® QuickAssist Technology (Intel® QAT)</li> </ul>	<ul style="list-style-type: none"> <li>Intel® AES New Instructions</li> <li>Intel® QuickAssist Technology (Intel® QAT)</li> <li>Intel® Virtualization Technology (Intel® VT)</li> <li>Intel® Trusted Execution Technology (Intel® TXT)</li> </ul>	<ul style="list-style-type: none"> <li>Configurable packet processor</li> <li>HW offload for networking</li> <li>Acceleration engines for storage, networking and security</li> <li>Public Key Processor (RSA/DH/ECC)</li> <li>Secure Storage</li> <li>Secure boot</li> </ul>
	TPM	1 x TPM 2.0 pin header	1 x TPM 2.0 pin header	1 x TPM 2.0 pin header	N/A
Networking	Ethernet IC	1 GbE NIC: Intel® i211-AT	1 GbE NIC: Intel® i211-AT 1 GbE PHY: Marvell 88E1512 10 GbE: Integrated in CPU	1 GbE NIC: Intel® i211-AT	10 GbE PHY: SoC Marvell 88F8040 1 GbE PHY: Marvell 88E1512P
	Ethernet Port	6 x 1GbE RJ-45 LAN ports	2 x 10 GbE SFP+ 6 x 1GbE RJ-45 LAN ports	4 x 10 GbE, SFP+ 8 x 1GbE RJ-45 LAN ports	2 x 10 GbE SFP+ 4 x 1GbE RJ-45 LAN ports
	Network Module Slot	N/A	N/A	1 x PuIM module slot	N/A
Expansion Slot	PCIe Slot	1 x PCIe x16 slot	N/A	1 x PCIe x4 slot	1 x PCIe x16 slot (PCIe x2 signal)
	PCIe Mini Card Slot	1 x PCIe Mini card (SATA, USB 2.0) with SIM slot	1 x PCIe Mini (USB 2.0, PCIe x1) with SIM card slot	1 x PCIe Mini (PCIe +USB 2.0) with SIM card	N/A
	M.2	1 x M.2 A key (PCIe & USB 2.0)	1 x M.2 A key (USB 2.0, PCIe x1)	2 x 2260/2280 M key (PCIe x4)	1 x M.2 B Key (3042/2260) (SATA and USB 3.2 Gen 1) Support SATA SSD and 4G LTE module
Storage	Storage	2 x 2.5" SATA HDD/SSD bay	1 x SATA DOM + 1 x SATA power 5V 1 x M.2 M key 2260/2280	2 x 2.5" SATA HDD/SSD bay	1 x 2.5" SATA HDD/SSD
	eMMC	N/A	1 x eMMC 32GB	N/A	32GB
	SD Card	N/A	N/A	N/A	N/A
External I/O	USB	2 x USB 3.2 Gen 1	1 x USB 2.0 1 x USB 3.2 Gen 1	1 x USB 2.0 1 x USB 3.2 Gen 1	2 x USB 3.2 Gen 1
	Console	1 x RJ-45	1 x RJ-45	1 x RJ-45	1 x RJ-45
Internal I/O	M.2	1 x M.2 A key (PCIe & USB 2.0)	1 x M.2 A key (USB 2.0, PCIe x1)	2 x 2260/2280 M key (PCIe x4)	1 x M.2 B key (SATA 6Gb/s & USB 3.2 Gen 1)
	HDMI	1 x HDMI connector (optional)	N/A	N/A	N/A
	USB	2 x USB 2.0 (pin header)	N/A	1 x USB2.0 QNAP USB DOM	1 x USB 2.0
Power and Mechanical	Power Switch	1 x Power Switch	1 x Power Switch	1 x Power Switch	1 x Power Switch
	Reset Button	1 x Reset Button	1 x Reset Button	1 x Reset Button	1 x Reset Button
	Power Input	100 V ~ 240 V	1 x DC jack	100 V ~ 240 V	100 V ~ 240 V
	Type/Watt	ATX Power 250W, 90V~264V AC	12 V DC-in, 60W	Redundant Power 300W, 90V~264V AC	ATX Power 250W, 90V~264V AC
	Processor Cooling	1 x Passive CPU Heatsink	Passive CPU Heatsink	1 x Passive CPU Heatsink	1 x Active CPU Heatsink with fan
System Cooling	4 x Cooling Fans with Smart Fan	Two system fans for C3758 sku Fanless for C3558 sku	4 x Cooling fans with smart fan	2 x Cooling Fans with Smart Fan	
Physical and Environmental	Antenna Port	1 x Antenna port	2 for WiFi, 2 for WWAN	1 x Antenna port	1 x Antenna port
	Storage Temperature	0 ~ 40°C	0 ~ 40°C	0 ~ 40°C	0 ~ 40°C
	Operating Temperature	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)
	Operating Humidity	5% ~ 90% non-condensing	Relative humidity: 5% ~ 90% non-condensing	Relative humidity: 5% ~ 90% non-condensing	5% ~ 90% non-condensing
	Dimensions (W x H x D) (mm)	430 x 320 x 44.2	225 x 206 x 44.2	430 x 426 x 44.2	430 x 320 x 44.2
OS and Certifications	Weight	5 kg	2 kg	7 kg	5 kg
	Certification	CE / FCC	CE / FCC	CE / FCC	CE / FCC
Indicators	Operating System	Linux Ubuntu 16.04.04	Linux 18.04 (CentOS, Red Hat, Ubuntu, etc.)	Linux 18.04 (CentOS, Red Hat, Ubuntu, etc.)	Linux Ubuntu 16.04.04
	LCM	LCM, 2 buttons	N/A	LCM, 2 buttons	N/A
Indicators	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	N/A	1 x Power LED, 1 x Storage LED, 1 x Alert LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED

# » PuIM series



	PuIM-1G4T-I211	PuIM-1G4T-I211-BP	PuIM-10G4SF-XL710	PuIM-10G4SF-XL710-BP
Chipset	Intel® I211	Intel® I211	Intel® XL710	Intel® XL710
Bypass	No	Yes	No	Yes
Host Interface	4 PCIe 2.0 x2	4 PCIe 2.0 x2	PCIe 3.0 x8	PCIe 3.0 x8
LAN Interface	RJ-45	RJ-45	SFP+	Fiber LC (SR&LR)
Speed	GbE	GbE	10 GbE	10 GbE
LAN Port Number	4	4	4	4
Operating Temp	0°C ~ 40°C			
Humidity	5% ~ 90% RH, non-condensing			
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)			



	PuIM-10G4T-AQC107	PuIM-1G8T-BCM5720	PuIM-25G2SF-MLX	PuIM-10G4SF-MLX
Chipset	Aquantia AQC107	Broadcom BCM5720	Mellanox ConnectX-4	Mellanox ConnectX-4
Bypass	No	No	No	No
Host Interface	4 PCIe 3.0 x2	4 PCIe 2.0 x2	PCIe 3.0 x8	2 PCIe 3.0 x4
LAN Interface	RJ-45	RJ-45	SFP28	SFP+
Speed	10 GbE	GbE	25 GbE	10 GbE
LAN Port Number	4	8	2	4
Operating Temp	0°C ~ 40°C			
Humidity	5% ~ 90% RH, non-condensing			
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)			



Coming Soon



	PuIM-2P1M	PuIM-M2-2S
Interface	2 PCIe 3.0 x4	2 PCIe 3.0 x4
Switch IC	ASM1812 (PCIe Gen2x4 ) FL1100EX (PCI-E To USB 3.0 (4 Port))	N/A
M.2	1 x 2230/2242 M.2 B key (PCIe, USB 3.0)	2 x M key 2260/2280/22110 (PCIe/NVMe)
PCIe	1 x PCIe Mini (PCIe, USB 2.0) 1 x PCIe Mini (PCIe, USB 2.0) with SIM card slot	N/A
Operating Temp	0°C ~ 40°C	
Humidity	5% ~ 90% RH, non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	



# GRAND-C610



Model	GRAND-C610-20C
CPU	FCLGA2011-3 sockets-support Xeon® E5-2600 v3 family
Memory (RAM)	System memory: RDIMM / LRDIMM Total memory slots: 16 Memory expandable up to: 1 TB (64 GB x 16)
USB 2.0 / 3.2	4 x USB 3.2 Gen 1 (5Gb/s)
Internal Hard Drive and Type	16 x 3.5" SAS (12Gbps/6Gbps) / SATA (6Gbps/3Gbps) HDDs or 2.5" SAS/SATA SSD 4 x 2.5" SAS (12Gbps) SSD or SAS/SATA (6Gbps/3Gbps) SSD
Max. Raw Capacity	128 TB
Interface	SAS 12Gb/s backward-compatible to SAS/SATA 6Gb/s
Ethernet	2 x GbE
PCIe slot	4 (3 x PCIe Gen3 x8, 1 x PCIe Gen3 x16)
Cache	M.2 Gen.2 x4
Form Factor	3U, Rackmount
Dimensions (H x W x D)	88 x 442.5 x 530.5 mm
Power	650W (Redundant)
Fan	Smart Fan 4 (6cm 12V DC)
Weight (Net/Gross) kg	Net (NAS): 22.42 kg / 49.43 lb Gross (with accessories and package): 30.19 kg / 66.56 lb
Noise	Sound Pressure Level (LpAm): 64.8 dB
Power Consumption	Sleep mode: 254.21 W In Operation: 362.86 W

# GRAND-BDE



Model	GRAND-BDE-18B	GRAND-BDE-30B
CPU	Intel® Xeon® Processor D-1521, 4 core 2.4 GHz Intel® Xeon® Processor D-1531, 6 core 2.2 GHz Intel® Xeon® Processor D-1548, 8 core 2.0 GHz (for GRAND-BDE-30B only)	
Memory	Total DIMM slots: 4 Maximum memory: DDR4 128GB (32GB RDIMM x 4)	
Drive Tray SSD	Front: 2.5" / 3.5" x 12 Rear: 2.5" SSD drive bay x 6	Front: 2.5" x 24 Rear: 2.5" Rear: 2.5" SSD drive bay x 6
Hard Drive	Front: SAS 12Gb/s, SAS 6Gb/s, SATA 6Gb/s and SSD Rear: SATA 6Gb/s and SSD	
Network port	4 x Gigabit ports	
LEDs	10 GbE network, system status, network, drive LED	
Buttons	Power button, Reset button	
Form Factor	2U rack mount	
Dimensions (H x W x D)	88 x 442.5 x 530.5 mm 3.46 x 17.42 x 20.89 inch	88.3 x 439 x 484.5 mm 3.47 x 17.28 x 19.07 inch
Operating Temperature	0°C ~ 40°C	
Relative Humidity	5 to 95% non-condensing, wet bulb: 27°C	
Power Supply	Redundant power: input 90 to 264VAC: 450W x 2	
PCIe Expansion Slots	Quantity: 4 Slot 1: PCIe 3.0 x8 Slot 3: PCIe 3.0 x4 Slot 2: PCIe 2.0 x4 Slot 4: PCIe 3.0 x4 or PCIe 3.0 x8* Note: Slot 4 provides the bandwidth of PCIe 3.0 x8 when Slot 3 is not in use. Slot 4 then provides the bandwidth of PCIe 3.0 x4 only when an expansion board is installed in Slot 3.	
Fan	4 x 6 cm High efficiency fan	
10GbE PCIe Card Slot	Support specific 10GbE network card (P/N: LAN-10G2F-PHY-CS4227)	

# GRAND-MF



Model	GRAND-MF-16C-RP	GRAND-MF-16C	GRAND-MF-12B-RP	GRAND-MF-12B	GRAND-MF-08B-RP	GRAND-MF-08B
CPU	AMD R-Series RX-421ND quad-core 2.1 GHz processor, turbo core up to 3.4 GHz					
Encryption Acceleration	AES-NI					
Memory	Maximum 64GB (4 x 16GB) 4 x UDIMM DDR4, up to 2400MHz (For dual- or quad-DIMM configurations, you must use a pair of identical DDR4 modules.)					
Drive Types	16 x 3.5"/2.5" SATA 6Gb/s HDDs/SSDs		12 x 3.5"/2.5" SATA 6Gb/s HDDs/SSDs		8 x 3.5"/2.5" SATA 6Gb/s HDDs/SSDs	
M.2 SSD Slots	2 x M.2 2280/2260 SATA 6Gb/s SSDs					
Gigabit LAN Port	4 x Gigabit RJ45 LAN ports					
PCIe Slot	1 x PCIe Gen 3 x4					
USB Ports	2 x USB 3.2 Gen 1 (5Gb/s) port, 4 x USB 2.0 port					
LED Indicator	Status/Power, LAN, USB, Drive 1 - 16		Status/Power, LAN, USB, Drive 1 - 12		Status/Power, LAN, USB, Drive 1 - 8	
Button	Power/Status, Reset					
Maintenance Port	1 x 3.5 mm console port					
Form Factor	3U Rackmount			2U Rackmount		
Dimension (H x W x D)	130 x 481 x 536 mm 5.12 x 18.94 x 21.10 inch			89 x 482 x 534 mm 3.5 x 18.98 x 21.02 inch		
Net Weight	15.42 kg (34 lbs.)	14.25 kg (31.42 lbs.)	11.81 kg (26.04 lbs.)	10.71 kg (23.62 lbs.)	10.96 kg (24.16 lbs.)	9.86 kg (21.74 lbs.)
Operating Temperature & Relative Humidity	0 to 40°C (32 to 104°F), 5 ~ 95% RH non-condensing, wet bulb: 27°C					
Power Supply	500W (x2), 100-240V AC, 50/60 Hz	350W, 100-240V AC, 50/60 Hz	300W (x2), 100-240V AC, 50/60 Hz	350W, 100-240V AC, 50/60 Hz	250W (x2), 100-240V AC, 50/60 Hz	250W, 100-240V AC, 50/60 Hz
Fan	4 x 92 mm, 12V DC			2 x 70 mm, 12V DC		

## GRAND-AL



Model	GRAND-AL-04A	GRAND-AL-04A-RP	GRAND-AL-08B	GRAND-AL-08B-RP	GRAND-AL-12B	GRAND-AL-12B-RP
CPU	Intel® Celeron® J3455 4-core 1.5GHz (burst up to 2.3GHz)					
System memory	Total memory slots: 2 SODIMM; Memory expandable up to 8GB DDR3L (4GB x 2)					
Drive Trays	4		8		12	
Drive Types	SATA 6Gb/s, 3Gb/s HDD or SSD; Hot-swappable					
USB	4 x USB 3.2 Gen 1 (5Gb/s) (Rear)					
LAN Ports	4 x GbE					
HDMI Output	1 x HDMI 1.4b					
LED Indicators	System Status, HDD, Expansion, LAN					
Buttons	Power, Reset					
Form Factor	1U, rack mountable		2U, rack mountable		2U, rack mountable	
Dimensions (H x W x D)	44 x 439 x 499 mm 1.73 x 17.28 x 19.65 inch		89 x 482 x 534 mm 3.5 x 18.98 x 21.02 inch		89 x 482 x 534 mm 3.5 x 18.98 x 21.02 inch	
Net Weight	7.63 kg (16.82 lbs.)		11.02 kg (24.29 lbs.)		16.14 kg (35.58 lbs.)	
Temperature	0-40°C					
Relative Humidity	0~95% R.H.					
Power Supply	ATX 250W (single) ATX 250W (redundant x 2)		ATX 250W (single) ATX 250W (redundant x 2)		ATX 350W (single) ATX 250W (Redundant x2)	
Fan	2 x 40mm, 12V		DC 2 x 70mm, 12V		DC 2 x 70mm, 12V DC	

## GRAND-SE



Model	GRAND-SE-04A	GRAND-SE-04A-RP	GRAND-SE-08B	GRAND-SE-08B-RP	GRAND-SE-12B	GRAND-SE-12B-RP
CPU	64-Bit Quad-Core AMD® G-Series 2.0GHz					
Memory	Total memory slots: 2 SODIMM; Memory expandable up to 16GB DDR3L (8GB x 2)					
Max. HDDs/SSDs	4		8		12	
HDDs/SSDs Type	2.5" or 3.5" SATA 6Gb/s, 3Gb/s; hot-swappable					
Expansion Unit Support	Max. 1 expansion unit					
LAN Ports	4 x GbE ports					
USB Ports	USB 3.2 Gen 1 (5Gb/s): 2, USB 2.0: 3		USB 3.2 Gen 1 (5Gb/s): 2, USB 2.0: 2		USB 3.2 Gen 1 (5Gb/s): 2, USB 2.0: 2	
PCIe Slot	1 x PCIe 2.0 x 4 slot					
LED Indicators	Status, LAN, USB, HDD1-4		Power, Status, LAN, USB, HDD1-8		Power, Status, LAN, USB, HDD1-12	
Buttons	Power, Reset, USB Auto Copy		Power, Reset		Power, Reset	
Form Factor	1U Rackmount		2U Rackmount		2U Rackmount	
Dimensions (HxWxD)	1.73 x 17.28 x 19.65 inch		89 x 482 x 534 mm / 3.50 x 18.97 x 21.02 inch			
Weight (Net/Gross)	7.63 / 11.60 kg 16.82 / 25.57 lb		11.02 / 19.26 kg 24.29 / 42.46 lb		16.14 / 19.41kg 35.58 / 41.84 lb	
Temperature and Humidity	0-40°C, 5~95% RH non-condensing, wet bulb: 27°C					
Power Supply Specification	Input: 100-240V AC, 50/60Hz; Output: 250W					
	250W	2 x 250W	250W	2 x 250W	250W	2 x 250W

# » AFL3 Apollo Lake with PoE



LCD Size		7"	10.1"	12.1"	15.6"
Model		AFL3-W07A-AL-R10	AFL3-W10A-AL-R10	AFL3-12A-AL-R10	AFL3-W15A-AL-R10
LCD	Size	7"	10.1"	12.1"	15.6"
	Resolution	1024 x 600 (16:9)	1280 x 800 (16:10)	1024 x 768 (4:3)	1366 x 768 (16:9)
	Brightness (cd/m <sup>2</sup> )	500	350	500	300
	Contrast Ratio	700:1	800:1	700:1	500:1
	Viewing Angle (H-V)	150 / 145	170 / 170	160 / 160	170 / 160
	Backlight MTBF	20000	15000	50000	50000
Touch	Touch Screen	PCAP with USB interface (anti-UV/AG coating)	PCAP with USB interface (anti-UV/anti-glare coating)		
	Touch Controller	EETI 80H60	EXC3146	EXC3146	EXC3160
Mainboard	CPU	Intel® Celeron N3350 (2M Cache, up to 2.4 GHz) TDP 6W	Apollo lake Intel® Celeron® Processor J3455 (2M Cache, up to 2.3 GHz) TDP 10W		
	RAM	one 204-pin 1866MHz DDR3L DIMMs support up to 8GB			
	Ethernet	LAN1: Intel® I211	LAN1: Intel® I211 + LAN2: Intel® I211		
	Audio Codec	ALC888			
Storage	1 x M.2 B+M key PCIe 2242 (PCIe/SATA signal)	1 x 2.5" SATA 3Gb/s HDD bay 1 x M.2 B+M key PCIe 2242 (USB/PCIe/SATA signal)			
I/O Ports & Switch	2 x GbE LAN 2 x USB 3.2 Gen 1 (5Gb/s) 1 x 12V DC Jack 1 x power switch 1 x Reset button 1 x Clear CMOS button 1 x AT/ATX switch	1 x RS-232/422/485 by RJ45 1 x RS-232 by DP9 2 x GbE LAN 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 1 x HDMI output 1 x 9V~30V DC Jcack 1 x power switch 1 x Line out 1 x Reset button 1 x Clear CMOS button 1 x AT/ATX switch			
E-Window expansion	N/A	N/A	Yes (option)	Yes (option)	
PoE IEEE802.3bt	On board PoE at	Yes ( option single channel )			
Audio	AMP 2W (internal speaker)	AMP 2W + 2W	AMP 3W + 3W (internal speaker)	AMP 3W + 3W (internal speaker)	
Camera / Microphone	N/A	2-megapixel with low light function, digital microphone			
Wireless & Bluetooth	IEEE 802.11 a/b/g/n/ac, Bluetooth V4.0 ( 1 x M.2 A + E key 2230 )				
Physical	Construction Front Panel	PC + ABS Plastic			
	Mounting	Panel, Wall, Stand and Arm VESA 75mm x 75mm		Panel, Wall, Stand and Arm VESA 75mm x 75mm, 100mm x 100mm	
	Color	Black C			
	Dimensions (W x H x D)(mm)	191 x 127 x 43	262 x 181 x 42	304 x 243 x 44	396 x 250 x 53
	Cut-out Dimensions ( W x H )	182 x 111	236 x 149	243 x 205	273 x 226
	Net/Gross Weight (kgs)	0.73/1.81	1.06/2.58	1.92/3.95	3.3/5.6
Environment	Operating Temperature (°C) (Ambient with air flow)	-20°C~50°C			
	Storage Temperature (°C)	-20°C~60°C			
	Humidity	10% to 95% (non-condensing)			
	IP Level	IP 65 compliant front panel	IP 64 compliant front panel		
	Safety & EMC	CE / FCC class A			
Power	Power Requirement	12V only	9V~30V		
ErP	ErP 2009/125/EC				

# » AFL3 Whisky Lake with PoE



LCD Size		15.6"	18.5"	21.5"
Model		AFL3-W15C-ULT5	AFL3-W19C-ULT5	AFL3-W22C-ULT5
LCD	Size	15.6"	18.5"	21.5"
	Resolution	1366 x 768 (16:9)	1366 x 768 (16:9)	1920 x 1080 (16:9)
	Brightness (cd/m <sup>2</sup> )	300	250	250
	Contrast Ratio	500:01:00	1000:01:00	1000:01:00
	Viewing Angle (H-V)	170°/160°	170°/160°	170°/160°
	Backlight MTBF (hrs)	50000	30000	30000
Touch Screen		PCAP with USB interface(anti-UV/AG coating)		
Touch Controller		EXC3160		
Mainboard	CPU	Intel® Whiskey Lake-U quad-core processor		
	Memory	Two 260-pin 2400MHz dual-channel DDR4 SO-DIMMs supporting up to 32 GB		
	Ethernet	LAN1 & LAN2: Intel® I211; LAN3: Intel® I219		
	Audio Codec	ALC269		
Storage		1 x M.2 M-key 2242/60/80 PCIe 3.0 x4 (PCIe/SATA Signal) 1 x 2.5" SATA 3Gb/s HDD bay		
I/O Ports & Switch		2 x PoE GbE LAN (optional IEEE802.3af/at/bt) 1 x GbE LAN 4 x USB 3.2 Gen.2 1 x HDMI output 1 x RS-232/422/485 1 x RS-232 1 x 12V DC jack 1 x Power switch 1 x AT/ATX switch		
E-Window Expansion		PCIe mini slot (PCIe+USB)		
Audio		AMP 3W + 3W (internal speaker)		
Camera / Microphone		2-megapixel with low light function, digital microphone		
Wireless & Bluetooth		IEEE 802.11 a/b/g/n/ac, Bluetooth V4.1 M.2 slot A+E key 2230 slot (PCIe/USB signal)		
Physical	Construction Front Panel	PC + ABS Plastic		
	Mounting	Panel, Wall, Stand and Arm VESA 75mm x 75mm , 100mm x 100mm		
	Color	Black C		
	Dimensions (W x H x D) (mm)	396 x 250 x 64	470 x 290 x 70	528 x 336 x 68
	Cut-out Dimensions (W x H)	369 x 226	443 x 261	502 x 303
	Net/Gross Weight (kgs)	4.5/6.5	7.3/10	8.27/11.27
Environment	Operating Temperature (°C) (Ambient with air flow)	-20°C~50°C		
	Storage Temperature (°C)	-20°C~60°C		
	Humidity	10% to 95% (non-condensing)		
	IP Level	IP 64 compliant front panel		
	Safety & EMC	CE / FCC class A		
	Thermal Solution	Fanless		
Power	Power Requirement	12V , 8A		
		PoE IEEE802.3af/at/bt (redundancy, power load-sharing)		
ErP		ErP 2009/125/EC		

# AFOLUX GEN III



LCD Size		7"	8.4"	10.1"
Model		AFL3-W07A-BT	AFL3-08A-BT	AFL3-W10A-BT
LCD	Size	7"	8.4"	10.1"
	Resolution	1024 x 600 (16:9)	800 x 600 (4:3)	1280 x 800 (16:10)
	Brightness (cd/m <sup>2</sup> )	500	450	350
	Contrast Ratio	700:1	600:1	800:1
	LCD Color	16.2M	16.2M	16.2M
	Pixel Pitch (mm)	0.0635 (H) x 0.1905 (V)	0.213 (H) x 0.213 (V)	0.1695 (H)x0.1695 (V)
	Viewing Angle (H-V)	150° / 145°	160° / 140°	170° / 170°
	Backlight MTBF(hrs)	20000 hrs	50000 hrs	15000 hrs
Touch	Touch Screen	Projected capacitive with USB interface (anti-UV / anti-glare coating)	5-wire resistive with RS-232 interface (anti-glare coating) Projected capacitive with USB interface (anti-UV / anti-glare coating)	Projected capacitive with USB interface (anti-UV / anti-glare coating)
	Touch Controller	EETI EXC3160	PenMount DMC 9000/EETI EXC3146	EETI EXC3146
Motherboard	CPU	Intel® Celeron® N2807 (dual core, 1.58 GHz)	Intel® Celeron® J1900 (quad core, 2.0 GHz)	Intel® Celeron® J1900 (quad core, 2.0 GHz)
	RAM	2GB DDR3L onboard RAM/ 4GB DDR3L onboard RAM	One 204-pin 2 GB 1333MHz single-channel, 2GB DDR3L SO-DIMM pre-installed (system max. 8GB)	One 204-pin 2 GB 1333MHz single-channel, 2GB DDR3L SO-DIMM pre-installed (system max. 8GB)
	Ethernet	2 x PCIe GbE by RTL8111E controller		
	Audio Codec	ALC892		
Storage	mSATA		mSATA	1 x mSATA (E-Window)
I/O Ports & Switch	2 x RS-232 COM port (DB-9 connector) 2 x USB 3.2 Gen 1 (5Gb/s) 2 x GbE LAN 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x 9-30V Lockable power jack		1 x RS-232 COM port (RJ-45 connector) 1 x RS-232/422/485 COM port (DB-9 connector) (R1/5V/12V) 2 x USB 3.2 Gen 1 (5Gb/s) 2 x RJ-45 for GbE LAN 1 x Power switch 1 x Audio port (line-out) 1 x Reset button 1 x AT/ATX switch 1 x 9-30V DC Lockable power jack	1 x RS-232 COM port (RJ-45 connector) 1 x RS-232/422/485 COM port (DB-9 connector) (R1/5V/12V) 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 2 x RJ-45 for GbE LAN 1 x Power switch 1 x Audio port (line-out) 1 x Reset button 1 x AT/ATX switch 1 x 9-30V DC lockable power jack
	Audio	AMP 2W (internal speaker, left channel output)	AMP 2W + 2W (internal speaker)	AMP 2W + 2W (internal speaker)
Camera and Microphone	N/A		2-megapixel with low light function, digital microphone	
Wireless & Bluetooth	IEEE 802.11 a/b/g/n/ac, Bluetooth V4.0 half-size mini-PCIe slot (PCIe/USB signal)		IEEE 802.11a/b/g/n/ac half-size mini-PCIe slot (PCIe signal)	
OSD Function	Software OSD			
Physical	Front Panel Construction	PC + ABS Plastic		
	Mounting	Panel, Wall, Stand, Arm, Rack VESA 75mm x 75mm		
	Color	Black C		
	Dimensions (WxHxD) (mm)	191 x 127 x 43	233 x 175 x 50	262 x 181 x 42
	Cut-out Dimensions (WxH) (mm)	182 x 111	207 x 143	236 x 149
	Net/Gross Weight (kgs)	0.73/1.81	0.8/2.44	1.06/2.58
Environment	Operating Temperature (°C) (Ambient with air flow)	-20°C~50°C	-15°C~55°C	-10°C~50°C
	Storage Temperature (°C)	-20°C~60°C	-20°C~65°C	-20°C~60°C
	Humidity	10% to 95% (non-condensing)		
	IP Level	IP 65 compliant front panel	IP 64 compliant front panel	
	Safety&EMC	CE / FCC		
	Thermal Solution	Fanless		
Power	Power Requirement	9 V ~ 30 V DC		
	Power Consumption	12V@2.08 (Intel® N2807 CPU with 2GB 1333 MHz DDR3L memory)	12V@2A (Intel® J1900 CPU with 2GB 1333 MHz DDR3L memory)	12V@2.3A (Intel® J1900 CPU with 2GB 1333 MHz DDR3L memory)



# AFOLUX GEN III



LCD Size		12.1"	
Model		AFL3-12A-BT	AFL3-12C-ULT3
LCD	Size	12.1"	12.1"
	Resolution	1024 x 768 (4:3)	1024 x 768 (4:3)
	Brightness (cd/m <sup>2</sup> )	500	500
	Contrast Ratio	700:1	700:1
	LCD Color	16.2M	16.2M
	Pixel Pitch (mm)	0.240 (H) x 0.240 (V)	0.240 (H) x 0.240 (V)
	Viewing Angle (H-V)	160° / 160°	160° / 160°
	Backlight MTBF(hrs)	50000 hrs	50000 hrs
Touch	Touch Screen	5-wire resistive with RS-232 interface (anti-glare coating) Projected capacitive with USB interface (anti-UV / anti-glare coating)	Projected capacitive with USB interface (anti-UV / anti-glare coating)
	Touch Controller	PenMount DMC9000/ EETI EXC3146	EETI EXC3180
Motherboard	CPU	Intel® Celeron® J1900 (quad core, 2.0 GHz)	6th Generation Intel® Core™ i5 and Celeron® on-board processor
	RAM	One 204-pin 2 GB 1333MHz single-channel, 2GB DDR3L SO-DIMM pre-installed (system max. 8GB)	One 260-pin 2133MHz single-channel, 4GB DDR4 SO-DIMM pre-installed (system max. 8GB)
	Ethernet	2 x PCIe GbE by RTL8111E controller	2 x PCIe GbE by Intel® i211 controller
	Audio Codec	ALC892	ALC892
Storage	1 x mSATA (E-Window) 1 x 2.5" SATA 3Gb/s HDD bay	1 x mSATA (E-Window) 1 x 2.5" SATA 3Gb/s HDD bay	
I/O Ports & Switch	1 x RS-232 COM port (RJ-45 connector) 1 x RS-232/422/485 COM port (DB-9 connector)(RI/5V/12V) 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 2 x RJ-45 for GbE LAN 1 x Power switch 1 x Audio port (line-out) 1 x Reset button 1 x AT/ATX switch 1 x 9-30V lockable power jack	1 x RS-232/422/485 (DB-9) 1 x RS232 (RJ-45) 2 x GbE LAN 2 x USB 2.0 2 x USB 3.2 Gen 1 (5Gb/s) 1 x DC jack (12-30V DC) 1 x HDMI 1 x Power switch 1 x Reset button 1 x AT/ATX switch	
E-Window Expansion	Yes, optional (full-size mini-PCIe slot with PCIe/SATA/USB)	Yes, optional (full-size mini-PCIe slot with PCIe/SATA/USB)	
Audio	AMP 3W + 3W (internal speaker)	AMP 3W + 3W (internal speaker)	
Camera and Microphone	2-megapixel with low light function, digital microphone		
Wireless	IEEE 802.11a/b/g/n/ac half-size mini-PCIe slot (PCIe signal)	IEEE 802.11 a/b/g/n/ac, Bluetooth V4.1 M.2 slot A+E key 2230 slot (PCIe/USB signal)	
OSD Function	Software OSD		
Physical	Front Panel Construction	PC + ABS Plastic	
	Mounting	Panel, Wall, Rack, Stand and Arm VESA 75mm x 75mm / 100mm x 100mm	Panel, Wall, Stand and Arm VESA 75mm x 75mm / VESA 100mm x 100mm
	Color	Black C	
	Dimensions (WxHxD) (mm)	304 x 243 x 44	304 x 243 x 58
	Cut-out Dimensions (WxH) (mm)	243 x 205	272 x 223
	Net/Gross Weight (kgs)	1.92/3.95	3/5.03
Environment	Operating Temperature (Ambient with air flow)	-20°C~50°C	-20°C ~ 50°C
	Storage Temperature	-20°C~60°C	-30°C ~ 60°C
	Humidity	10% to 95% (non-condensing)	
	IP Level	IP 64 compliant front panel	
	Safety&EMC	CE / FCC	CE , FCC , ErP 2009/125/EC
Thermal Solution	Fanless		
Power	Power Requirement	9 V ~ 30 V DC	12 V ~ 30 V DC
	Power Consumption	12V@3.58A (Intel® J1900 CPU with 2GB 1333 MHz DDR3L memory)	12V@6A (Intel® Core™ i5-6300U CPU with 4GB DDR4 2133 MHz DDR4 memory)

# AFOLUX GEN III



LCD Size		15.6"		
Model		AFL3-W15A-BT	AFL3-W15B-H81	AFL3-W15C-ULT3
LCD	Size	15.6"		
	Resolution	1366 x 768 (16:9)		
	Brightness (cd/m <sup>2</sup> )	400		
	Contrast Ratio	500:1		
	LCD Color	16.2M		
	Pixel Pitch (mm)	0.240 (H) x 0.240 (V)		
	Viewing Angle (H-V)	170° / 160°		
	Backlight MTBF(hrs)	50000 (LED backlight)		
Touch	Touch Screen	5-wire resistive with RS-232 interface (anti-glare coating), Projected capacitive with USB interface (anti-UV / anti-glare coating)		
	Touch Controller	PenMount DMC9000 / EETI EXC3188	PenMount DMC9000 / EETI EXC7200	PenMount DMC9000 / EETI EXC3188
Motherboard	CPU	Intel® Celeron® J1900 (quad core, 2 GHz)	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor (TDP 35W)	6th Generation Intel® Core™ i5 and Celeron® on-board processor
	Chipset		Intel® H81	
	RAM	One 204-pin 1333 MHz single-channel DDR3L SO-DIMM, 2GB pre-installed (system max. 8GB)	Two 204-pin 1333 MHz single-channel DDR3 SO-DIMM, 4GB pre-installed (system max. 16GB)	Two 260-pin 2133/1867 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)
	Ethernet	2 x PCIe GbE by RTL8111E controller		2 x Intel® I211 PCIe GbE controller
	Audio Codec	ALC892		
Storage	1 x mSATA (E-Window) 1 x 2.5" SATA 3Gb/s HDD bay		1 x mSATA (E-Window) 1 x 2.5" SATA 3Gb/s HDD bay 1 x M.2 M key PCIe (2280 or 22110)	
I/O Ports & Switch	1 x RS-232 COM port (RJ-45 connector) 1 x RS-232/422/485 COM port (DB-9 connector) (RI/5V/12V) 2 x USB 2.0 2 x USB 3.2 Gen 1 (5Gb/s) 2 x GbE LAN 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x Audio port (line-out) 1 x 9-30V lockable power jack	1 x RS-232 COM port (DB-9 connector) 1 x RS-232/422/485 COM port (DB-9 connector) (RI/5V/12V) 2 x GbE LAN 4 x USB 2.0 2 x USB 3.2 Gen 1 (5Gb/s) 1 x HDMI output 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x Audio port (line-out) 1 x 9-30V lockable power jack	1 x RS-232 by DB-9 (RI/5V/12V) 1 x RS-232/422/485 by DB-9 (RI/5V/12V) 2 x GbE LAN 4 x USB 3.2 Gen 1 (5Gb/s) 1 x HDMI output 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x 9-30V lockable power jack	
E-Window Expansion	Yes, optional (full-size mini-PCIe slot with PCIe/SATA/USB)	N/A	Yes, optional (full-size mini-PCIe slot with PCIe/SATA/USB)	
Audio	AMP 3W + 3W (internal speakers)			
Camera and Microphone	2-megapixel with low light function, digital microphone			
Wireless & Bluetooth	IEEE 802.11a/b/g/n/ac half-size mini-PCIe slot (PCIe signal)	IEEE 802.11 a/b/g/n/ac, Bluetooth V4.0 half-size mini-PCIe slot (PCIe/USB signal)	IEEE 802.11 a/b/g/n/ac, Bluetooth V4.1 M.2 slot A+E key 2230 slot (PCIe/USB signal)	
OSD Function	Software OSD			
Physical	Front Panel Construction	PC + ABS Plastic		
	Mounting	Panel, Wall, Rack, Stand and Arm VESA 75mm x 75mm / 100mm x 100mm		
	Color	Black C		
	Dimensions (WxHxD) (mm)	396 x 250 x 53	396 x 250 x 59	396 x 250 x 64
	Cut-out Dimensions (WxH) (mm)	273 x 226	369 x 226	369 x 226
	Net/Gross Weight (kgs)	3.3/5.6	3.74/5.74	4.5/6.5
Environment	Operating Temperature (°C) (Ambient with air flow)	-20°C~50°C	0°C~50°C	-20°C~50°C
	Storage Temperature (°C)	-20°C~60°C		
	Humidity	10% to 95% (non-condensing)		
	IP Level	IP 64 compliant front panel		
	Safety & EMC	CE / FCC		
	Thermal Solution	Fanless	Smart Fan	Fanless
Power	Power Requirement	9 V ~ 30 V		
	Power Consumption	12V@4.16A (Intel® J1900 CPU with 2GB 1333 MHz DDR3 memory)	12V@6.33A (Intel® Pentium® G3320TE CPU with 4GB 1333 MHz DDR3L memory)	12V@.6A (Intel® Core™ i5-6300U CPU with 4GB DDR4 2133 MHz DDR4 memory)

# AFOLUX GEN III



LCD Size		18.5"		21.5"
Model		AFL3-W19C-ULT3	AFL3-W19A-AL	AFL3-W22C-ULT3
LCD	Size	18.5"	18.5"	21.5"
	Resolution	1366 x 768 (16:9)	1366 x 768 (16:9)	1920 x 1080
	Brightness (cd/m <sup>2</sup> )	250		
	Contrast Ratio	1000:1		
	LCD Color	16.7M	262K	16.7M
	Pixel Pitch (mm)	0.240 (H) x 0.240 (V)	0.240 (H) x 0.240 (V)	248.25 (H) x 248.25 (V)
	Viewing Angle (H-V)	170°/160°		
	Backlight MTBF(hrs)	30,000 (LED backlight panel)		
Touch	Touch Screen	Projected capacitive with USB interface (anti-UV / anti-glare coating)		
	Touch Controller	EETI EXC3180	EETI EXC3188	EETI EXC3180
Motherboard	CPU	Intel® Core™ i5 and Celeron® ULT Processor	Intel® Celeron® J3455 (quad core, 1.5GHz up to 2.3 GHz)	Intel® Core™ i5 and Celeron® ULT Processor
	RAM	Two 260-pin 2133/1867 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)	One 204-pin 1600/1333 MHz single-channel DDR3L SO-DIMM, 4GB pre-installed (system max. 8GB)	Two 260-pin 2133/1867 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)
	Ethernet	2 x Intel® I211-AT PCIe GbE controller	2 x PCIe GbE by Intel® i211 controller	2 x Intel® I211-AT PCIe GbE controller
	Audio Codec	ALC892	ALC269	ALC892
Storage		1 x mSATA (E-Window) 1 x 2.5" SATA 3Gb/s HDD bay 1 x M.2 M key PCIe (2280 or 22110)	1 x mSATA (E-Window) 1 x 2.5" SATA 3Gb/s HDD bay	1 x mSATA (E-Window) 1 x 2.5" SATA 3Gb/s HDD bay 1 x M.2 M key PCIe (2280 or 22110)
I/O Ports & Switch		1 x RS-232 by DB-9 (RI/5V/12V) 1 x RS-232/422/485 by DB-9 (RI/5V/12V) 2 x GbE LAN 4 x USB 3.2 Gen 1 (5Gb/s) 1 x HDMI output 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x 9V ~ 30V lockable power jack	1 x RS-232/422/485 by RJ-45 1 x RS-232 by RJ-45 2 x GbE LAN 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 1 x HDMI output 1 x 12V ~ 34V DC Jack 1 x Power switch 1 x AT/ATX switch 1 x Line out	1 x RS-232 by DB-9 (RI/5V/12V) 1 x RS-232/422/485 by DB-9 (RI/5V/12V) 2 x GbE LAN 4 x USB 3.2 Gen 1 (5Gb/s) 1 x HDMI output 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x 9-30V lockable power jack
E-Window Expansion		Yes, optional (full-size mini-PCIe slot with PCIe/SATA/USB)		
Audio		AMP 3W + 3W (internal speaker)		
Camera and Microphone		2-megapixel with low light function, digital microphone		
Wireless & Bluetooth		IEEE 802.11 a/b/g/n/ac, Bluetooth V4.1 M.2 slot A+E key 2230 slot (PCIe/USB signal)		
OSD Function		Software OSD		
Physical	Front Panel Construction	PC + ABS Plastic		
	Mounting	Panel, Wall, Stand and Arm VESA 75mm x 75mm / 100mm x 100mm	Panel, Wall, Stand and Arm VESA 100mm x 100mm	Panel, Wall, Stand and Arm VESA 75mm x 75mm / 100mm x 100mm
	Color	Black C		
	Dimensions (W x H x D) (mm)	470 x 290 x 70	470 x 280 x 60	528 x 336 x 68
	Cut-out Dimensions (W x H) (mm)	443 x 261	418 x 230	502 x 303
	Net/Gross Weight (kgs)	7.3/10	6.3/9	8.27/11.27
Environment	Operating Temperature (Ambient with air flow)	-20°C ~ 50°C	-15°C ~ 50°C	-20°C ~ 50°C
	Storage Temperature	-20°C ~ 60°C		
	Humidity	10% to 95% (non-condensing)		
	IP Level	IP 64 compliant front panel		
	Safety & EMC	CE / FCC		
	Thermal Solution	Fanless		
Power	Power Requirement	9V ~ 30V DC	12V ~ 34V DC	9V ~ 30V DC
	Power Consumption	12V@7.1A (Intel® Core™ i5-6300U CPU with 4GB DDR4 2133 MHz DDR4 memory)	12V@3.2A (Intel® Celeron J3455 CPU with 4GB DDR3L 1866 MHz DDR3L memory)	12V@6A (Intel® Core™ i5-6300U CPU with 4GB DDR4 2133 MHz DDR4 memory)

## » AFOLUX GEN II



Model		AFL2-12A-HM65	
LCD Specifications	Size	12.1"	
	Resolution	1024 (W) x 768 (H)	
	Brightness (cd/m <sup>2</sup> )	600	
	Contrast Ratio	700:1	
	LCD Color	16.2 M	
	Pixel Pitch (mm)	0.240 (H) x 0.240 (V)	
	Viewing Angle (H-V)	160° / 140°	
	Backlight MTBF	50000 hrs (LED backlight)	
Touch	Touch Screen	5-wire resistive type with RS-232 interface / projected capacitive type with USB interface	
	Touch Controller	PenMount DMC9000 / EETI EXC7200 & EXC5400	
System	CPU	2nd Generation Intel® Core™ i7/ i5/ i3 and Celeron® processor	
	Chipset	Intel® HM65	
	RAM	Support one 204-pin DDR3 SO-DIMM slot (Max. 4GB)	
	Ethernet	Realtek RTL8111E PCIe GbE controller supporting ASF 2.0	
	Storage	2.5" SATA 6Gb/s SSD bay	
		1 x RS-232 (DB-9) 1 x RS-232 (RJ-45) 1 x RS-422/485 (4-pin box header) 2 x GbE LAN (RJ-45) 2 x USB 2.0 2 x USB 3.2 Gen 1 (5Gb/s) 1 x Mini USB 2.0 port on front panel 1 x Audio jack (line-out)	1 x HDMI port 1 x MicroSD card slot on front panel 1 x Power switch 1 x AT/ATX switch 1 x Reset button 1 x Clear CMOS button 1 x DC input jack
	Input / Output		
Other Features	Audio	AMP 3W + 3W (internal speaker)	
	Camera	2 M pixels with low light function	
	RFID Reader	EM 125 KHz or Mifare 13.56 MHz card reader (optional)	
	MSR Card Reader	MSR card reader (optional)	
	OSD Function	LCD on/off, brightness up/down, volume up/down, Hot Key	
	Ambient Light Sensor	Yes	
	Infrared Remote Controller	Yes	
	System Cooling	Smart fan	
Connectivity	Wireless	IEEE 802.11b/g/n module Telec certified	
Physical	Construction Front Panel	PC + ABS Plastic	
	Mounting	Panel, Wall, Rack, Stand and Arm VESA 100 mm x 100 mm	
	Color	Black	
	Dimensions (WxHxD)(mm)	310 x 265 x 52.6	
	Weight (N/G)	3.8 kg / 6.1 kg	
Environment	Operating Temperature (°C) (Ambient with air flow)	-20°C ~ 50°C with SSD	
	Storage Temperature (°C)	-20°C ~ 60°C	
	Humidity	10% to 95% (non-condensing)	
	IP Level	IP 64 compliant front panel	
	Safety&EMC	CE / FCC	
Power	Power Supply	90W power adapter Input: 100VAC~240VAC, 50/60Hz Output: 19VDC	
	Power Requirement	9 ~ 36 VDC	
	Power Consumption	19V@2.68A (Intel® Core™ i5-2510E processor with 4GB DDR3 memory)	

## » MODAT Series



Model		MODAT-550A-OA53-R10	MODAT-550A-OA53-ET-R10
Display	LCD size	5.5"	
	Brightness (cd/m <sup>2</sup> )	300 cd/m <sup>2</sup>	
	Max. Resolution	1080 x 1920 (Full HD)	
	Viewing Angle	80/80/80/80 Deg.	
	Touchscreen	5-point capacitive	
	System	CPU	Octa-core 64-bit Cortex-A53 1.5 GHz processor
Operating System		Android 7.0	
Memory		16GB eMMC 2GB LPDDR3	
Storage		microSD slot up to 64GB	
		Wi-Fi	802.11a/b/g/n
Communication	Bluetooth	4.0 LE	
	Modem (Optional)	GSM (850, 900, 1800, 1900) WCDMA (Band 1, 2, 5, 8) TDS-CDMA (Band 34, 39) LTE FDD (Band 1, 2, 3, 4, 5, 7, 8, 20) TDD (Band 38, 39, 40, 41b)	
	GPS	GPS/Glonass	
Data Collection	NFC	Yes	
	Barcode	1D/2D imager scan engine	N/A
	Camera	13-megapixel AF rear camera	
Indicators & Buttons	LED Indicators	Green/Red	
I/O Interface	Audio	1 x 0.5W speaker 1 x Headset/Mic-in	
	USB	1x High-speed Micro USB 2.0 OTG	
Power	Power Adapter	5V/3A	
	Battery	4000 mAh	
Environments	Operating Temperature	-10°C ~ 50°C	
	Storage Temperature	-20°C ~ 60°C	
	Humidity	10% ~ 95%, non condensing	
	Drop Survival	1.5m	
	Environmental Protection	IP 65	
Physical	Dimensions (L x W x H)	160.9 mm x 85.4 mm x 28.85 mm	
	Weight	Under 380g	

## » E-MPCIE-LAN-R10



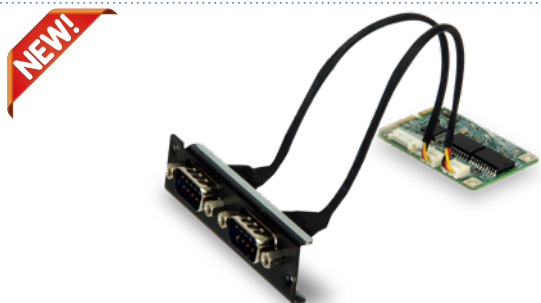
Model	E-MPCIE-LAN-R10
Form Factor	PCI Express Mini card
Ethernet Controller	Realtek RTL8111E
Speed	10/100/1000Mbps
External Connector	1 x 8-pin RJ-45
Compatible OS	Windows 2000/ XP/ Server 2003/ Server 2008/ Vista/ 7 Linux kernel version 2.6.32 or above
Power Supply	On board 3.3V
Operating Temperature	-10°C ~ 70°C
Operating Humidity	5% ~ 95%, non-condensing
Dimensions (LxW)	51 mm x 30 mm
Weight	70g
Safety & EMC	CE/FCC compliant

## » E-MPCIE-DLAN-R10



Model	E-MPCIE-DLAN-R10
Form Factor	PCI Express Mini card
BIOS	UEFI BIOS
Ethernet Controller	Dual Intel® I210-IT
Speed	10/100/1000Mbps
External Connector	2 x 8-pin RJ-45
Power Supply	On board 3.3V
Compatible OS	Windows XP/Server 2003/ Server 2008/ Vista/ 7 /8.1/10 Linux kernel version 2.6.32 or above
Operating Temperature	-10°C ~ 70°C
Operating Humidity	5% ~ 95%, non-condensing
Dimensions (LxW)	51 mm x 30 mm
Weight	55g
Safety & EMC	CE/FCC compliant

## » E-MPCIE-CAN-R10



Model	E-MPCIE-CAN-R10
Form-factor	full-size PCIe Mini
Input I/F	PCIe Mini interface (USB interface)
Communication Baud Rate	50/125/250/500/1000K @ 40meter
Host Site Connector	Internal USB port (PCIe Mini via USB)
Output I/F	2 x CAN Bus 2.0B port with optional isolation
CANBus Connector	two 3-pin (GND, CAN_H, CAN_L) male type wafer connectors (p=1.25 mm)
Support Voltage and Current	5.0 V
Output Connector	D-Sub 9P to 1x3P-1.25 mm + G-TEM, L=30cm
LED Status	D1 Green, Power on/off LED D2 Red, CAN-1 Tx LED D3 Red, CAN-2 Tx LED
Operating Temperature	-40 to +85 °C
Storage Temperature	-40 to +85 °C
OS Support	Windows /Linux
Dimensions (L x W x H)	30 x 50.9 x 6 mm
EMI	-Complies with EN61000-4-5 2.5kV surge protection -Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection -Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV

## » E-MPCIE-3G-R10



Model	E-MPCIE-3G-R10
Form Factor	PCI Express Mini card Antenna 50Ohms. Main GSM/UMTS antenna
Frequency Bands	GSM/GPRS/EDGE: 850/900/1800/1900 GPRS/EDGE Class12 UMTS/HSPA+: Dual band UMTS 800/850/900/1900/2100 MHz
USB	USB 2.0 High Speed (480Mbit/s) device interface
Compatible OS	Windows® 8, Windows® 7, Windows EC, Linux, Android
Operating Temperature	Normal operation: -30°C to +85°C Restricted operation: -40°C to +95°C
Dimensions (W x D x H)	51.0 mm x 30.0 mm x 4.75 mm

# PPC-F-ULT5 Series



LCD Size		15"	15.6"	17"
Model		PPC-F15D-ULT5	PPC-FW15D-ULT5	PPC-F17D-ULT5
TFT LCD	LCD Size	15"	15.6"	17"
	Max. Resolution	1024 x768	1366x768	1280x1024
	Brightness (cd/m <sup>2</sup> )	450	400	350
	Contrast Ratio	800:1	500:1	1000:1
	LCD Color	16.2M	16.2M	16.7M
	Pixel Pitch (mm)	0.29 x 0.29	0.252 x 0.252	0.26 x 0.26
	Viewing Angle (H/V)	160°/150°	170°/160°	170°/160°
	Backlight MTBF (Hrs)	70,000	50,000	50,000
Touch Screen	Touchscreen Type	Projected capacitive type with 10-point multitouch and anti-glare coating		
	Touch Controller	EETI EXC3000		
System	CPU	8th Generation Intel® Core™ i5-8365U 4.10GHz 8th Generation Intel® Celeron® 4205U 2.00GHz		
	Memory	2 x 260-pin 2400 MHz dual-channel DDR4 unbuffered SO-DIMM supporting up to 32GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, 4K codec decode		
	Ethernet	2 x Intel® I211, 1 x Intel® I219		
Storage		2.5" HDD/SSD SATA 6Gb/s bay		
I/O Ports and Switches		4 x USB 3.2 Gen 2 (10Gbps) 1 x HDMI output 1 x RS-232/422/485 1 x RS-232 3 x GbE LAN (2 for PoE PD GbE LAN)	1 x 12V DC jack 1 x Power switch with LED indicator (blue) 1 x AT/ATX switch 1 x Line-out 1 x Reset button	
Expansion Slots		1 x NGFF M.2 2230 A Key (PCIe x1, USB signal) 1 x NGFF M.2 2280 M Key (support PCIe 3.0 x4 NVMe) 2 x PoE PD module socket (by IEI pin definition)		
Thermal Solution		Fanless		
Watchdog Timer		Software Programmable support 1~255 sec. system reset		
Construction	Dimensions (mm) (W x H x D)	378.5 x 303 x 75	400.1 x 253.3 x 77.1	408.4 x 341.4 x 75.6
	Cutout Dimensions (W x H) (mm)	361.1 x 285.6	379.1 x 232.3	391 x 324
	Net Weight (kg)	6.1	7.1	7.2
	Color	PANTONE 296 C		
	Front Frame	Aluminum die-casting		
	Rear Cover	Sheet metal		
	Mounting	Wall mount, Panel mount, Rack mount		
Environmental	Operating Temp.	-10°C ~ 50°C (with air flow)		
	Storage Temp.	-20°C ~ 60°C		
	Humidity	10% ~ 95% (non-condensing)		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		
Power Input		12V DC input		



# PPC-F-ULT5 Series



LCD Size		18.5"	21.5"	23.8"
Model		PPC-FW19D-ULT5	PPC-FW22D-ULT5	PPC-FW24D-ULT5
TFT LCD	LCD Size	18.5"	21.5"	23.8"
	Max. Resolution	1366 x 768	1920 x 1080	1920 x 1080
	Brightness (cd/m <sup>2</sup> )	400	250	250
	Contrast Ratio	1000:1	1000:1	3000:1
	LCD Color	16.7M	16.7M	16.7M
	Pixel Pitch (mm)	0.3 x 0.3	0.25 x 0.25	0.274 x 0.274
	Viewing Angle (H/V)	170°/160°	170°/160°	178°/178°
	Backlight MTBF (Hrs)	50,000	30,000	30,000
Touch Screen	Touchscreen Type	Projected capacitive type with 10-point multitouch and anti-glare coating		
	Touch Controller	EETI EXC3000		
System	CPU	8th Generation Intel® Core™ i5-8365U 4.10GHz 8th Generation Intel® Celeron® 4205U 2.00GHz		
	Memory	2 x 260-pin 2400 MHz dual-channel DDR4 unbuffered SO-DIMM supporting up to 32GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, 4K codec decode		
	Ethernet	2 x Intel® I211, 1 x Intel® I219		
Storage	2.5" HDD/SSD SATA 6Gb/s bay			
I/O Ports and Switches	4 x USB 3.2 Gen 2 (10Gbps) 1 x HDMI output 1 x RS-232/422/485 1 x RS-232 3 x GbE LAN (2 for PoE PD GbE LAN)	1 x 12V DC jack 1 x Power switch with LED indicator (blue) 1 x AT/ATX switch 1 x Line-out 1 x Reset button		
Expansion Slots	NGFF M.2 (2230/2280) A/E Key, M Key sockets (support NVMe SSD)			
Thermal Solution	Fanless			
Watchdog Timer	Software Programmable support 1~255 sec. system reset			
Construction	Dimensions (mm) (W x H x D)	469.8 x 289.2 x 76.9	550.4 x 358.4 x 74.4	600 x 382 x 75.56
	Cutout Dimensions (mm)	447.8 x 257.2	340 x 532	358.6 x 576.6
	Net Weight (kgs)	7.3	9.4	10.8
	Color	PANTONE 296 C		
	Front Frame	Aluminum die-casting		
	Rear Cover	Sheet metal		
	Mounting	Wall mount, Panel mount, Rack mount	Wall mount, Panel mount	
Environmental	Operating Temp.	-10°C ~ 50°C (with air flow)		
	Storage Temp.	-20°C ~ 60°C		
	Humidity	10% ~ 95% (non-condensing)		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		
Power Supply	12V DC input			

# PPC-F-Q370 Series



LCD Size		15"	W15"	17"
Model		PPC-F15C-Q370	PPC-FW15C-Q370	PPC-F17C-Q370
TFT LCD	LCD Size	15"	15.6"	17"
	Max. Resolution	1024x768	1366x768	1280x1024
	Brightness (cd/m <sup>2</sup> )	450	400	350
	Contrast Ratio	800:1	500:1	1000:1
	LCD Color	16.2M	16.2M	16.7M
	Viewing Angle (H/V)	160°/150°	170°/160°	170°/160°
	Backlight MTBF (Hrs)	70,000	50,000	50,000
Touch Screen		PCAP touch with 10-point multitouch, anti-glare coating		
Mainboard	CPU	8th Generation Intel® Core™ i7/i5/i3 and Pentium® processor in the LGA 1151 package		
	Chipset	Intel® Q370 Chipset		
	Memory	2 x 288-pin 2666/2400 MHz dual-channel DDR4 unbuffered DIMM slot supporting up to 64GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, supports DX2015, OpenGL 5.X and OpenCL 2.x, ES 2.0		
	Ethernet	Intel® I211 controller		
Storage		(1) 4 x Accessible 2.5" SATA 6Gb/s HDD/SSD bay (RAID 0/1/5/10 support) with LED indicator (2) 2 x M.2 2280 PCIe Gen 3.0 x4 NVMe™ SSD socket		
I/O Ports and Switches		1 x HDMI output 2 x GbE LAN 6 x USB 3.2 Gen 1 (5Gb/s) Type-A 2 x RS-232 DB-9 type 1 x Mic in 1 x Line out 1 x AC power in Inlet Power button with power LED (power on=Blue) AT/ATX mode switch Reset button		
Expansion Slots		2 x PCIe 3.0 by 8 (by 16 slot) 2 x PCIe 3.0 by 4 ( maximum card size supported: 68 mm x 167 mm)		
Thermal Solution		Smart Fan		
Power Supply		AC input ATX power supply 1. 250W power supply - Input: 115VAC~230VAC, 50/60Hz - Output (max.): 3.3V@12A, 5V@14A, 12V@25A, -12V@0.3A, +5Vsb@3A 2. 350W power supply (Build to Order) - Input: 115VAC~264VAC, 50/60Hz - Output (max.): 3.3V@14A, 5V@16A, 12V@29A, -12V@0.3A, +5Vsb@3A -Efficiency: Full load (100%) 87%, Typical load (50%) 90%, Light load (20%) 87%		
Watchdog Timer		Software Programmable support 1~255 sec. system reset		
Construction	IP Rating	IP66-rated front panel		
	Chassis Construction	Metal Housing		
	Mounting	Rack/Panel Mount		
	Color	Front Bezel : Cyan-blue (PSM 296C), Others: Black C		
	Cut-out dimensions (LxDxH) (mm)	361.1 x 285.6	379.1 x 232.3	391 x 324
	Dimensions (LxDxH) (mm)	378.5 x 303 x 118	400.1 x 253.3 x 121	408.4 x 341.4 x 119
Environmental	Operating Temperature	-20°C ~ 50°C (with SSD and up to TDP 65W processor) -20°C ~ 40°C (with HDD or add-on cards without fan)		
	Storage Temperature	-30°C ~ 60°C		
	Operating Humidity	5% ~95%, non-condensing		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		

# PPC-F-Q370 Series



LCD Size		18.5"	21.5"	23.8"
Model		PPC-FW19C-Q370	PPC-FW22C-Q370	PPC-FW24C-Q370
TFT LCD	LCD Size	18.5"	21.5"	23.8"
	Max. Resolution	1366x768	1920x1080	1920x1080
	Brightness (cd/m <sup>2</sup> )	400	250	250
	Contrast Ratio	1000:1	1000:1	3000:1
	LCD Color	16.7M	16.7M	16.7M
	Viewing Angle (H/V)	170°/160°	170°/160°	178°/178°
	Backlight MTBF (Hrs)	50,000	30,000	30,000
Touch Screen		PCAP touch with 10-point multitouch, anti-glare coating		
Mainboard	CPU	8th Generation Intel® Core™ i7/i5/i3 and Pentium® processor in the LGA 1151 package		
	Chipset	Intel® Q370 Chipset		
	Memory	2 x 288-pin 2666/2400 MHz dual-channel DDR4 unbuffered DIMM slot supporting up to 64GB		
	Graphics Engine	Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, supports DX2015, OpenGL 5.X and OpenCL 2 x, ES 2.0		
	Ethernet	Intel® I211 controller		
Storage		(1) 4 x Accessible 2.5" SATA 6Gb/s HDD/SSD bay (RAID 0/1/5/10 support) with LED indicator (2) 2 x M.2 2280 PCIe Gen 3.0 x4 NVMe™ SSD socket		
I/O Ports and Switches		1 x HDMI output 2 x GbE LAN 6 x USB 3.2 Gen 1 (5Gb/s) Type-A 2 x RS-232 DB-9 type 1 x Mic in	1 x Line out 1 x AC power in Inlet Power button with power LED (power on=Blue) AT/ATX mode switch Reset button	
Expansion Slots		2 x PCIe 3.0 by 8 (by 16 slot) 2 x PCIe 3.0 by 4 ( maximum card size supported: 68 mm x 167 mm)		
Thermal Solution		Smart Fan		
Power Supply		AC input ATX power supply 1. 250W power supply - Input: 115VAC~230VAC, 50/60Hz - Output (max.): 3.3V@12A, 5V@14A, 12V@25A, -12V@0.3A,+5Vsb@3A 2. 350W power supply (Build to Order) - Input: 115VAC~264VAC, 50/60Hz - Output (max.): 3.3V@14A, 5V@16A, 12V@29A, -12V@0.3A,+5Vsb@3A -Efficiency: Full load (100%) 87%, Typical load (50%) 90%, Light load (20%) 87%		
Watchdog Timer		Software Programmable support 1~255 sec. system reset		
Construction	IP Rating	IP66-rated front panel		
	Chassis Construction	Metal Housing		
	Mounting	Rack/Panel Mount	Panel Mount	
	Color	Front Bezel : Cyan-blue (PSM 296C), Others: Black C		
	Cut-out dimensions (LxDxH) (mm)	447.8 x 267.2	533 x 341	577.6 x 359.6
	Dimensions (LxDxH) (mm)	469.8 x 289.2 x 120.8	550.4 x 358.4 x 117.8	600 x 356.6 x 119
Environmental	Operating Temperature	-20°C ~ 50°C (with SSD and up to TDP 65W processor) -20°C ~ 40°C (with HDD or add-on cards without fan)		
	Storage Temperature	-30°C ~ 60°C		
	Operating Humidity	5% ~95%, non-condensing		
	Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
	Shock	10G acceleration part to part (11ms)		

# PPC-F Series



LCD Size		5.7"	8"	10.4"	12"	15"	
Model		PPC-F06B-BT	PPC-F08B-BT	PPC-F10B-BT	PPC-F12B-BT	PPC-F15A-H81	PPC-F15B-BT
Display	LCD Size	5.7" (4:3)	8" (4:3)	10.4"	12" (4:3)	15" (4:3)	15" (4:3)
	Max. Resolution	640 (W) x 480 (H)	800 (W) x 600 (H)	800 (W) x 600 (H)	1024 (W) x 768 (H)	1024 (W) x 768 (H)	1024 (W) x 768 (H)
	Brightness (cd/m <sup>2</sup> )	550	500	400	600	450	450
	Contrast Ratio	800 : 1	500 : 1	700 : 1	700 : 1	800 : 1	800 : 1
	LCD Color	262K	16.2M	16.2M	16.2M	16.2M	16.2M
	Pixel Pitch (mm) (HxV)	0.18 x 0.18	0.2025 x 0.0675	0.264 x 0.264	0.24 x 0.24	0.297 x 0.297	0.297 x 0.297
	Viewing Angle (V/H)	160° / 140°	140° / 120°	160° / 140°	160° / 140°	160° / 150°	160° / 150°
	Backlight MTBF (hrs)	50000	50000	30000	50000	70000	70000
Touch	TouchScreen	4-wire resistive type flat touch window, 3H	5-wire resistive type flat touchscreen, 3H	5-wire resistive type flat touchscreen, 3H	5-wire resistive single touch window, 3H (Anti-glare Surface) 10-point Projected capacitive touch window, 6H (Anti-UV, Anti-glare Surface)		
	Touch Controller	PenMount DMC9000	PenMount DMC9000	PenMount DMC9000	Penmount DMC 9000 EETI EXC3188	Penmount DMC 9000 EETI EXC3188	Penmount DMC 9000 EETI EXC3188
Motherboard	CPU	Intel® Celeron® processor N2807, dual-core, 1.58GHz	Intel® Celeron® J1900 on-board SoC, quad-core, 2GHz	Intel® Celeron® J1900 on-board SoC, quad-core, 2GHz	Intel® Celeron® quad-core J1900 SoC, 2GHz	4th generation Intel® Core™ i7/ i5/i3, Pentium® and Celeron® processor, up to TDP 65W CPU	Intel® Celeron® quad-core J1900 SoC, 2GHz
	Chipset	N/A	N/A	N/A	N/A	N/A	Intel® H81
	RAM	2GB DDR3L 1600MHz on-board RAM (system max. 4GB by MOQ=300pcs)	1 x 204-pin DDR3L SO-DIMM slot (max. 8GB)	1 x 204-pin DDR3L SO-DIMM slot (max. 8GB)	2 x 204-pin 1066/1333 MHz DDR3L SO-DIMM supported (max. 8GB)	2 x 204-pin DDR3 SO-DIMM slots (max. 16GB)	2 x 204-pin 1066/1333 MHz DDR3L SO-DIMM supported (max. 8GB)
	Ethernet	2 x RTL 8111E	2 x RTL 8111E	2 x RTL 8111E	1 x PCIe GbE by Intel® I210 controller 1 x PCIe GbE by Intel® I211 controller	1 x PCIe GbE by Intel® I210 controller 1 x PCIe GbE by Intel® I217 controller	1 x PCIe GbE by Intel® I210 controller 1 x PCIe GbE by Intel® I211 controller
	Audio Codec	Realtek ALC662 HD codec	Realtek ALC892 HD codec	Realtek ALC892 HD codec	Realtek ALC662 HD codec	Realtek ALC662 HD codec	Realtek ALC662 HD codec
I/O Ports and Switches		1 x RJ-45 LAN port 1 x RS-232 COM port (DB-9 connector) (RI/5V/12V) 1 x RS-422/485 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 1 x 9 V~36 V DC lockable jack (2-pin) 1 x Audio port (line-out) 1 x Power switch 1 x Reset button 1 x AT/ATX switch	1 x RS-232 COM port (RJ-45 connector) 1 x RS-232/422/485 COM port (DB-9 connector) (RI/5V/12V) 2 x USB 3.2 Gen 1 (5Gb/s) 2 x GbE LAN 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x Audio port (line-out) 1 x 9 V~30 V lockable power jack	1 x RS-232 COM port (RJ-45 connector) 1 x RS-232/422/485 COM port (DB-9 connector) (RI/5V/12V) 2 x USB 2.0 2 x USB 3.2 Gen 1 (5Gb/s) 2 x GbE LAN 1 x Power switch 1 x Reset button 1 x AT/ATX switch 1 x Audio port (line-out) 1 x 9 V~30 V lockable power jack	2 x RJ-45 LAN port 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 1 x HDMI 2 x RS-232 (DB-9 connector) 1 x RS-232/422/485 1 x VGA 1 x 9 V~36 V DC jack (4-pin) 1 x 9 V~36 V DC terminal block 1 x Power switch	2 x RJ-45 LAN Port 2 x USB 3.2 Gen 1 (5Gb/s) 4 x USB 2.0 1 x HDMI output 4 x RS-232 1 x RS-422/485 1 x MIC-in 1 x Line-out 1 x VGA output 1 x AC/DC power plug (DC model is by build to order manufacturing) 1 x AT/ATX switch 1 x Clear CMOS 1 x Reset button 1 x Power switch	2 x RJ-45 LAN port 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 1 x HDMI 2 x RS-232 1 x RS-232/422/485 1 x VGA 1 x 9 V~36 V DC jack (4-pin) 1 x 9 V~36 V DC terminal block 1 x Line-out 1 x Power switch
Drive Bay	HDD Driver Bay	N/A	N/A	1 x 2.5" HDD bay	1 x 2.5" HDD bay	1 x 2.5" HDD bay	1 x 2.5" HDD bay
	SSD	mSATA					
Expansion Slot	1 Full Size PCIe Mini Slot (with mSATA, PCIe/USB Signal)	1 x Full-size PCIe Mini slot (with mSATA/Pcie/USB signal) 1 x Half-size PCIe Mini slot for Wi-Fi modules			1 x Full-size PCIe Mini card slot 1 x Full-size PCIe Mini card slot colay mSATA		
System Cooling	Fanless	Fanless	Fanless	Fanless	Active fan	Fanless	
Environment	Operating Temperature	-10°C~50°C (14°F~122°F)					
	Storage Temperature	-20°C~60°C (-4°F~140°F)					

# PPC-F Series



LCD Size		17"		19"	22"	23.8"
Model		PPC-F17A-H81	PPC-F17B-BT	PPC-F19B-BT	PPC-F22A-H81	PPC-F24A-H81
Display	LCD Size	17"	17"	19"	22"	23.8"
	Max. Resolution	1280 (W) x 1024 (H)			1920 (W) x 1080 (H)	
	Brightness (cd/m <sup>2</sup> )	350			250	
	Contrast Ratio	1000 : 1				
	LCD Color	16.7M				
	Pixel Pitch (mm) (HxV)	0.26 x 0.26	0.26 x 0.26	0.294 x 0.294	0.25 x 0.25	0.28 x 0.28
	Viewing Angle (V/H)	170° / 160°	170° / 160°	170° / 160°	165° / 165°	178° / 178°
	Backlight MTBF (hrs)	50000			30000	
Touch	Touchscreen	5-wire resistive single touch window, 3H (Anti-glare Surface) 10-point Projected capacitive touch window, 6H (Anti-UV, Anti-glare Surface)			10-point Projected capacitive touch window, 6H (Anti-UV, Anti-glare Surface)	
	Touch Controller	Penmount DMC 9000 EETI EXC3188			EETI EXC3188	
Motherboard	CPU	4th generation Intel® Core™ i7/ i5/ i3, Pentium® and Celeron® processor, up to TDP 65W CPU	Intel® Celeron® quad-core J1900 SoC, 2GHz	Intel® Celeron® processor J1900 (2M cache, up to 2.42 GHz)	4th generation Intel® Core™ i7/ i5/ i3, Pentium® and Celeron® processor, up to TDP 65W CPU	
	Chipset	Intel® H81	N/A		Intel® H81	
	RAM	2 x 204-pin DDR3 SO-DIMM slots (max. 16GB)	2 x 204-pin 1066/1333 DDR3L SO-DIMM supported (max. 8GB)	2 x 204-pin DDR3L SO-DIMM slot (max. 8GB), pre-installed with 2GB	2 x 204-pin DDR3 SO-DIMM slots (max. 16GB)	
	Ethernet	1 x PCIe GbE by Intel® I210 controller 1 x PCIe GbE by Intel® I211 controller				
	Audio Codec	Realtek ALC662 HD codec				
I/O Ports and Switches		2 x RJ-45 LAN Port 2 x USB 3.2 Gen 1 (5Gb/s) 4 x USB 2.0 1 x HDMI output 4 x RS-232 1 x RS-422/485 1 x MIC-in 1 x Line-out 1 x VGA output 1 x AC/DC power plug (DC model is by build to order manufacturing) 1 x AT/ATX switch 1 x Clear CMOS 1 x Reset button 1 x Power switch	2 x RJ-45 LAN port 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 1 x HDMI 2 x RS-232 1 x RS-232/422/485 1 x VGA 1 x DC jack (4-pin) 1 x Terminal block 1 x Microphone & speaker 1 x power switch	2 x RJ-45 LAN port 2 x USB 3.2 Gen 1 (5Gb/s) 2 x USB 2.0 1 x HDMI 2 x RS-232 1 x RS-232/422/485 1 x VGA 1 x 9 V~36 V DC jack (4-pin) 1 x 9 V~36 V DC terminal block 1 x Line-out (PPC-F15B & PPC-F17B & PPC-F19B only) 1 x Power switch	2 x RJ-45 LAN Port 2 x USB 3.2 Gen 1 (5Gb/s) 4 x USB 2.0 1 x HDMI output 4 x RS-232 1 x RS-422/485 1 x MIC-in 1 x Line-out 1 x VGA output 1 x AC/DC power plug (DC model is by build to order manufacturing) 1 x AT/ATX switch 1 x Clear CMOS 1 x Reset button 1 x Power switch	2 x RJ-45 LAN Port 2 x USB 3.2 Gen 1 (5Gb/s) 4 x USB 2.0 1 x HDMI output 4 x RS-232 1 x RS-422/485 1 x MIC-in 1 x Line-out 1 x VGA output 1 x AC/DC power plug (DC model is by build to order manufacturing) 1 x AT/ATX switch 1 x Clear CMOS 1 x Reset button 1 x Power switch
Drive Bay	HDD Driver Bay	1 x 2.5" SATA HDD bay with anti-shook			1 x 2.5" SATA HDD bay with anti-shook or 1 x 3.5" SATA HDD bay with anti-shook	
	SSD	mSATA				
Expansion Slot		1 x Full-size PCIe Mini card 1 x Full-size PCIe Mini card co-lay mSATA				
System Cooling		Active fan	Fanless	Fanless	Active fan	
Environment	Operating Temperature	-10°C~50°C (14°F~122°F)				
	Storage Temperature	-20°C~60°C (-4°F~140°F)				

# PPC Series



LCD Size		15"	17"	19"
Model		PPC-5150A-H61	PPC-5170A-H61	PPC-5190A-H61
Display	LCD Size	15 "	17 "	19 "
	Max Resolution	1024(W) x 768(H)	1280(W) x 1024(H)	1280(W) x 1024(H)
	Brightness (cd/m <sup>2</sup> )	450	350	350
	Contrast Ratio	800:1	800 : 1	1000 : 1
	LCD Color	16.2M	16.7M	16.7M
	Pixel Pitch (mm) (HxV)	0.297 x 0.297	0.264(H) x 0.264(V)	0.294(H) x 0.294(V)
	Viewing Angle (V/H)	150° / 160°	160° / 160°	160° / 170°
	Backlight MTBF (hrs)	50000		
Touch	Touchscreen	5-wire resistive type with RS-232 interface		
	Touch Controller	DMC 9000		
Motherboard	CPU	2nd/3rd generation Intel® Core™ i7/ i5/ i3, Pentium® and Celeron® processor, up to TDP 65W CPU		
	Chipset	Intel® H61		
	RAM	Two 204-pin DDR3 SO-DIMM slots (max. 16GB)	Two 204-pin DDR3 SO-DIMM slots (max. 16GB)	Two 204-pin DDR3 SO-DIMM slots (max. 16GB)
	Ethernet	Realtek RTL8111E PCIe GbE controller supporting ASF 2.0		
	Audio Codec	Realtek ALC662 audio codec		
I/O Ports and Switches	4 x RS-232 COM port 1 x RS-232/422/485 port 2 x RJ-45 for LAN port 4 x USB 2.0, 2 x USB 3.2 Gen 1 (5Gb/s) on rear 1 x VGA port 1 x Audio (Line-out, MIC-in) 2 x SFP fiber LAN 1 x Power switch 1 x AT/ATX switch 1 x PCI/PCIe slot	1 x RS-232/422/485 2 x RJ-45 for LAN port 4 x USB 2.0, 2 x USB 3.2 Gen 1 (5Gb/s) on rear 1 x VGA port 1 x Audio (Line-out, MIC-in) 2 x SFP fiber LAN 1 x Power switch 1 x AT/ATX switch 1 x PCI/PCIe slot	4 x RS-232COM port 1 x RS-232/422/485 port 2 x RJ-45 for LAN port 4 x USB 2.0, 2 x USB 3.2 Gen 1 (5Gb/s) on rear 1 x VGA port 1 x Audio (Line-out, MIC-in) 2 x SFP fiber LAN 1 x Power switch 1 x AT/ATX switch 1 x PCI/PCIe slot	
Drive Bay	HDD Drive Bay	1 x 2.5" SATA HDD bay with anti-shook		
	SSD	CF Type II, mSATA (SATA2)		
	CD-ROM Drive Bay	Slim type CD-ROM bay		
Expansion Slot		Either 1 x PCI slot or 1 x PCIe slot, 1 x PCIe Mini card		
System Cooling		Active with fan		
Environment	Operating Temperature	-20°C ~ 60°C	-20°C ~ 60°C	-10°C ~ 50°C
	Storage Temperature	-30°C ~ 70°C	-30°C ~ 70°C	-20°C ~ 60°C



# Vertical Market PPC (Marine Series)



Model		S19A-QM87	S24A-QM87	S19M	S24M
Display	LCD Size	19"	24"	19"	24"
	Max. Resolution	1280 x 1024	1920 x 1080	1280 x 1024	1920 x 1080
	Brightness (cd/m <sup>2</sup> )	300	300	300	300
	Contrast Ratio	2000:1	5000:1	2000:1	5000:1
	LCD Color	16.7M	16.7M	16.7M	16.7M
	Pixel Pitch (mm) (HxV)	0.294 x 0.294	276.75 x 276.75	0.294 x 0.294	276.75 x 276.75
	Viewing Angle (V/H)	178° / 178°	178° / 178°	178° / 178°	178° / 178°
	Backlight MTBF (hrs)	50000	50000	50000	50000
Touch	Touchscreen	Projected capacitive touch with USB interface, 6H			
Motherboard	CPU	Intel® 22nm 4th Generation Mobile Core™ i5-4400E 2.7GHz processor		-	-
	Chipset	Intel® QM87	Intel® QM87	-	-
	RAM	Two 204-pin 1600/1333 MHz dual-channel DDR3 SDRAM support up to 16GB		-	-
	Ethernet	GbE1: Intel® I217LM with Intel® AMT 9.0 support GbE2: Intel® I210-AT PCIe controller		-	-
	Audio Codec	N/A	N/A	-	-
I/O Ports and Switches	3 x USB 2.0 2 x USB 3.2 Gen 1 (5Gb/s) 1 x VGA 1 x DVI-D 1 x HDMI 1 x PS/2 (through Y-type cable supporting KB/MS) 2 x CAN-bus 2.0B, 3-pin terminal block (2.5KV isolation protection) 1 x DB-9 RS-232 (non-isolated), 4 x DB-9 RS-232/422/485 (2.5KV isolation protection) 2 x RJ-45 GbE LAN with teaming support (2KV isolation protection) 1 x Mic-in 1 x Line-out 1 x Line-in 2 x Antenna SMA hole (reserved) 1 x Isolated 9V ~ 36V DC 3-pin terminal block 1 x Power button			<ul style="list-style-type: none"> <li>• DVI-D Signal Input: 2 x DVI (24-pin, female)</li> <li>• VGA Signal Input: 2 x D-sub (15-pin, female)</li> <li>• VGA Signal Output: 1 x D-sub (15-pin, female) - Clone of VGA IN*</li> <li>• Composite Video Input: 1 x BNC connector (female)</li> <li>• Composite Video Output: 1 x BNC connector (female)</li> <li>• RS-232/422/485 for remote control (Non-isolated)</li> <li>• Touchscreen: 1 x USB Type A connector (female)</li> <li>• Ethernet: 1 x RJ-45 connector for remote control</li> <li>• Isolated AC Power Inlet: 100V~240V AC</li> <li>• Isolated DC Terminal Block: 18V~36V DC</li> <li>• 1 x Buzzer</li> </ul>	
Drive Bay	HDD Driver Bay	-	-	-	-
	SSD	2 x SSD Bay & 1 x CFAST	2 x SSD Bay & 1 x CFAST	-	-
Expansion Slot	2 x PCIe Mini card	2 x PCIe Mini card	-	-	
System Cooling	Fanless	Fanless	Fanless	Fanless	
Environment	Operating Temperature	-15°C to 55°C (5% to 95% RH)			
	Storage Temperature	-20°C to 60°C			
IP Rating	Front IP 66 / Rear IP 22				

# Vertical Market PPC (UPC and IP69K Series)



reddot award 2018  
winner



Model		UPC-F12C-ULT3	INOX-F15C-ULT3
Display	LCD Size	12.1"	15"
	Max. Resolution	1024 x 768	1024(W) x 768(H)
	Brightness (cd/m <sup>2</sup> )	600	450
	Contrast Ratio	700 : 1	800 : 1
	LCD Color	16.2M	16.2M
	Pixel Pitch (mm) (HxV)	0.240 (H) x 0.240 (V)	0.297 (H) x 0.297 (V)
	Viewing Angle (V/H)	160° / 140°	160° / 150°
	Backlight MTBF (hrs)	50000	70000
Touch		P-CAP / Resistive Touc	P-CAP / Resistive Touch
Motherboard	CPU	6th Generation Intel® Core™ i5 and Celeron® ULT Processor	6th Generation Intel® Core™ i5 and Celeron® ULT Processor
	Chipset		
	RAM	1 x 260-pin 2133/1867 MHz single-channel DDR4 SO-DIMMs (system max. 32GB)	2 x 260-pin 2133/1867 MHz Dual-channel DDR4 SO-DIMMs (system max. 32GB)
	Ethernet	LAN1: PCIe GbE by Intel I210 controller LAN2: PCIe GbE by Intel I211 controller	2 x PCIe GbE by Intel I210 controller
	Audio Codec	Realtek ALC892 audio codec	Realtek ALC892 audio codec
I/O Ports and Switches		M12 Type: 1 x 8-pin M12 connector for RS-232 1 x 8-pin M12 connector for RS-232/422/485 1 x 8-pin M12 connector for GbE LAN 2 x 8-pin M12 connector for USB2.0 x2 1 x 5-pin M12 connector for DC Jack (12~36V DC)  Standard Type: 1 x DC Jack (12V-36V DC) 1 x DC in Terminal Block (12V-36V DC) 1 x HDMI 1 x VGA 1 x RS-232 (COM1 RJ-45) 1 x RS-232/422/485 (COM2 RJ-45) 2 x LAN 2 x USB 2.0 2 x USB 3.2 Gen 1 (5Gb/s)	2 x 8-pin M12 connector for RS-232/422/485 2 x 8-pin M12 X-Code connector for GbE LAN 2 x 8-pin M12 connector for 2*USB2.0 1 x 5-pin M12 connector for DC Jack (9-36V DC) 1 x Power switch with power led indicator 1 x Pressure relief valve
Drive Bay	HDD Driver Bay	1 x 2.5" SATA SSD bay	SATA SSD
	SSD	1 x M.2 (B key 2242 with USB 2.0 and SATA signal)	1 x mSATA / 1 x M.2 B-key (2242/2260/2280)
Expansion Slot		1 x Full-size/half-size mini PCIe card slot (PCIe x1 and USB 2.0 signal)	1 x Full size mini PCIe card slot (SATA 6G/s) 1 x Full-size/half-size (PCIex1 and USB 2.0 signal) 1 x B key M.2 slot (2242/2260/2280 with USB 3.2 Gen 1 (5Gb/s), PCIe x2 ,SATA signal)
System Cooling		Fanless	Fanless
Environment	Operating Temperature	-20°C ~ 60°C (without heater solution) -40°C ~ 60°C (with heater solution)	-20°C ~ 50°C
	Storage Temperature	-40°C ~ 70°C	-30°C ~ 60°C
IP Rating		Full IP65 or Full IP66 (with M12 connectors)	Front IP69K/ Others IP66

# RISC Based Panel PC



		IOVU-210AD-RK39-R10-TW	IOVU-207AR-RK39-R10-TW	IOVU-210AR-RK39-R10-TW
Chassis	Color	white		
	Dimensions (WxHxD)	293 x 209.5 x 44.5 (mm)	210.7 x 154.7 x 29.6 (mm)	282.5 x 174.3 x 26.8 (mm)
	System Fan	Fanless		
	Chassis Construction	PC + ABS plastic front, Metal rear	PC + ABS plastic front, Metal rear	PC + ABS plastic
Display	Size	10"	7"	10"
	Resolution	800(RGB) x 1280	720 RGB x 1280	800(RGB) x 1280
	Brightness (cd/m <sup>2</sup> )	350 cd/m <sup>2</sup> (typ.)	300 cd/m <sup>2</sup> (typ.)	350 cd/m <sup>2</sup> (typ.)
	Pixel Pitch (mm)	0.0564(H) x 0.1692(V)	0.1239 (H) x 0.119 (V)	0.0564(H) x 0.1692(V)
	Viewing Angle (H/V)	85/85/85/85 Deg.	70/70/70/70 Deg.	85/85/85/85 Deg.
	Touchscreen	Projected capacitive		
Motherboard	CPU	Rockchip RK3399 (Dual-core Cortex-A72 up to 1.8GHz + Quad-core Cortex-A53 up to 1.5GHz)		
	System Memory	On-board 2 GB LPDDR3-1866		
Storage	SD Card	1 x Micro SD Slot		
	Flash	On-board 16 GB eMMC		
Communication	WLAN	On-board Wi-Fi 802.11a/b/g/n/ac (2T2R)		
	Bluetooth	Bluetooth 4.1		
	RFID	13.56 MHz ISO4443 A/B, read-write capable (NXP PN553)	N/A	13.56 MHz ISO4443 A/B, read-write capable (NXP PN553)
I/O Interfaces	I/O interface	1 x 10/100/1000Mbps RJ45 LAN w/ POE 1 x RS-232/422/485 1 x RS-232 1 x DIO 4pin (2 in / 2 out) 1 x DC jack 1 x DC in terminal block	1 x 10/100/1000Mbps RJ45 LAN 2 pin terminal block for SOS key 1 x DC jack	1 x RS-232 (4 pin wafer connector) 1 x RS-232/422/485 (4 pin terminal block) 1 x 4 bit (2 in, 2 out) - (terminal block) 2 x 2 bit (1 in, 1 out) - (4 pin wafer connector) 3 x I <sup>2</sup> C (4 pin wafer connector) 1 x 10/100/1000Mbps RJ45 LAN w/ POE 1 x 10/100/1000Mbps RJ45 LAN 1 x DC jack
	USB 3.2 Gen 1	1 x Type A 1 x Type C OTG	1 x Type A	1 x Type A
	USB 2.0	2 x Type A	1 x Type A	1 x Type A
	Others	2 x USB 2.0 (internal)	1 x Type C OTG (Internal) 2 x UART w/ 3V (internal) 2 x USB 2.0 (internal)	1 x Type C OTG (Internal) 2 x UART w/ 3V (internal) 2 x USB 2.0 (internal)
Multimedia	Speaker / Mic	2 x Mic 1 x 2W speaker	1 x Mic 1 x 2W Speake	1 x Mic 2 x 1.5W Speaker
	Camera	5-megapixel		
LED Indicator & Button	Indicator	1 x Power LED 1 x WiFi LED 1 x BT LED	1 x Power (green) 1 x Mail (blue) 1 x Phone (green) 1 x Exclamation Mark (red)	1 x Power LED 1 x RFID LED 3 x Key pad LED (Volume / SOS)
	Button	1 x Reset Button	1 x Reset Button 1 x SOS Key ( with red bar ) 2 x Function Key for AP operation (with green bar)	1 x Reset Button 1 x Volume up 1 x Volume down 1 x SOS Button
Power	Power Input	12V DC input (range : 9V ~ 30V) PoE: IEEE 802.3 at standard (Power Device)	12V DC input (range : 9V ~ 30V)	12V DC input (range : 9V ~ 30V) PoE: IEEE 802.3 at standard (Power Device)
	Consumption	12V @ 1.2A	12V @ 1.05A	12V @ 1.1A
Reliability	Mounting	VESA Mount 75mmx75mm	VESA Mount 75mmx75mm	Panel mount, In wall cage VESA 110mmx100mm
	Operating Temperature	-10°C ~ 50°C with air flow		
	Storage Temperature	-20°C ~ 60°C		
	Humidity	10% ~ 90%, non-condensing		
	Safety/EMC	CE/FCC / Class A compliant	CE/FCC / Class B compliant	CE/FCC / Class B compliant
OS	Supported OS	Android 7.1	Android 7.1 / Linux	Android 7.1 / Linux

# » Heavy Industrial Monitor



Model		DM-F65A	DM-F08A	DM-F12A	DM-F15A	DM-FW15A
LCD	LCD Display	6.5" (4:3)	8" (4:3)	12.1" (4:3)	15" (4:3)	15.6" (16:9)
	Max. Resolution	640 (W) x 480 (H)	800 x 600	1024 (W) x 768 (H)	1024 (W) x 768 (H)	1366 (W) x 768 (H)
	Brightness (cd/m <sup>2</sup> )	800	500	600	450	400
	Contrast Ratio	600:1	500:1	700 : 1	800 : 1	500:1
	LCD Color	16.2M	262K	16.2M	16.2M	16.2M
	Pixel Pitch (mm)	0.207 x 0.207	0.0675 x 0.2025	0.24 x 0.24	0.29 x 0.29	0.252 x 0.252
	Viewing Angle (H-V)	160° / 140°	140°/120°	160° /140°	160° / 150°	170° / 160°
	Backlight MTBF (Hrs)	50000	50000	50000	70000	50000
Touchscreen & Controller		5-wire resistive single touch window/ Penmount 6000		5-wire resistive single touch window/ Penmount 6000 (Anti-glare Surface) 10-point Projected capacitive touch window, 6H/EETI EXC3188 (Anti-UV, Anti-glare Surface)		
I/O Ports		1 x VGA (DB-15) 1 x DVI 1 x USB 2.0 (touch) 1 x RS-232 (reserved for resistive touch ATO) 1 x Lockable 12V DC jack		1 x VGA (DB-15) 1 x HDMI 1 x DisplayPort 1.1 1 x USB 2.0 (touch) 1 x RS-232 (reserved for resistive touch ATO) 1 x Lockable 9V-36V DC jack 1 x 9V-36V terminal block		
OSD	OSD Button	5-key membrane OSD keypad		7-key membrane OSD keypad		
	Smart OSD Software	Smart OSD Software				
Physical	Construction Material	Aluminum front frame and sheet metal rear cover				
	Mounting	Panel Mount/ Rack Mount 75 x 75 VESA Mount		Panel Mount/ Rack Mount 100 x 100 VESA Mount		
	Enclosure Color	Black C				
	Dimensions (mm)	191.8 x 154.36 x 42.88	222.2 x 182.2 x 42.7	262.2 x 322.2 x 40.5	303 x 378.5 x 43.2	400.1 x 253.3 x 52.9
	Cutout Dimensions (mm)	180 x 140	206 x 154	244.8 x 304.8	285.6 x 361.1	379.1 x 232.3
	Weight (kg) Net/ Gross	1.1 / 2.6	1.33 / 4.5	2.7 / 4.9	3.5 / 5.5	4 / 6.5
Environment	Operating Temperature (with air flow)	-20°C ~ 60°C (with air flow)				
	Storage Temperature	-20°C ~ 70°C				
	Humidity	10% to 95% (non-condensing)				
	IP Level	IP 65 compliant front panel				
	Safety and EMC	CE & FCC certified				
Power Input		12V DC		9V~36V DC		
Power consumption		12V @ 0.5A	12V @ 0.5A	9V @ 2.2A 36V @ 0.5A	9V @ 1.6A 36V @ 0.4A	9V @ 1.3 36V @ 0.33

# » Heavy Industrial Monitor



Model		DM-F17A	DM-FW19A	DM-F19A	DM-F22A	DM-F24A
LCD	LCD Display	17" (5:4)	18.5" (16:9)	19" (5:4)	21.5" (16:9)	23.8" (16:9)
	Max. Resolution	1280 (W) x 1024 (H)	1366 (W) x 768 (H)	1280 (W) x 1024 (H)	1920 (W) x 1080 (H)	1920 (W) x 1080 (H)
	Brightness (cd/m <sup>2</sup> )	350	400	350	250	250
	Contrast Ratio	1000 : 1	1000 : 1	1000 : 1	1000 : 1	3000 : 1
	LCD Color	16.7M				
	Pixel Pitch (mm)	0.26 x 0.26	0.3 x 0.3	0.294 x 0.294	0.25 x 0.25	0.28 x 0.28
	Viewing Angle (H-V)	170° / 160°			170° / 160°	178° / 178°
	Backlight MTBF (Hrs)	50000			30000	30000
Touchscreen & Controller		5-wire resistive single touch window, 3H/Penmount 6000 (Anti-glare Surface) 10-point Projected capacitive touch window, 6H/EETI EXC3188 (Anti-UV, Anti-glare Surface)			10-point Projected capacitive touch window, 6H/EETI EXC3188 (Anti-UV, Anti-glare Surface)	
I/O Ports		1 x VGA (DB-15) 1 x DVI (F19A only) 1 x HDMI (F17A & FW19A only) 1 x DisplayPort 1.1 1 x USB 2.0 (touch) 1 x RS-232 (reserved for resistive touch ATO) 1 x Lockable 9V-36V DC jack 1 x 9V-36V terminal block			1 x VGA (DB-15) 1 x HDMI 1 x DisplayPort 1.1 1 x USB 2.0 (touch) 1 x RS-232 (reserved for resistive touch ATO) 1 x Lockable 9V-36V DC jack 1 x 9V-36V terminal block	
OSD	OSD Button	7-key membrane OSD keypad				
	Smart OSD Software	Smart OSD Software				
Physical	Construction Material	Aluminum front frame and sheet metal rear cover				
	Mounting	Panel Mount/ Rack Mount 100 x 100 VESA Mount			Panel Mount 100 x 100 VESA Mount	Panel Mount 100 x 100 VESA Mount
	Enclosure Color	Black C				
	Dimensions (mm)	341.4 x 408.4 x 49.3	468.8 x 288.2 x 48.9	372.4 x 447.4 x 49.57	358.4 x 550.4 x 49.1	382 x 600 x 49.4
	Cutout Dimensions (mm)	324 x 391	447.8 x 267.2	430 x 355	340 x 532	358.6 x 576.6
	Weight (kg) Net/Gross	4.4 / 7.1	5 / 8.1	5.4 / 8.4	6.3 / 9.6	7.6 / 10.9
Environment	Operating Temperature (with air flow)	-20°C ~ 60°C (with air flow)			-10°C ~ 50°C	-10°C ~ 50°C
	Storage Temperature	-20°C ~ 70°C	-20°C ~ 70°C	-20°C ~ 70°C	-20°C ~ 60°C	-20°C ~ 60°C
	Humidity	10% to 95% (non-condensing)				
	IP Level	IP 65 compliant front panel				
	Safety and EMC	CE & FCC certified				
Power input		9V~36V DC				
Power consumption		9V @ 2.6A 36V @ 0.6A	9V @ 1.33A 36V @ 0.35A	9V @ 3.3A 36V @ 0.8A	9V @ 2.5A 36V @ 0.6A	9V @ 3.4A 36V @ 0.8A

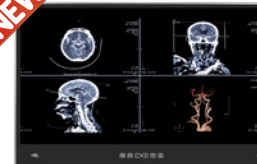
# POC / BIS Series



Series		POC		BIS
Model		POC-17C-ULT3	POC-W24C-ULT3	BIS-W19C-ULT4
LCD/Touch	LCD Size (inch)	17"	24"	18.5"
	Max. Resolution	1280 (W) x 1024 (H)	1920 (W) x 1080 (H)	1366 (W) x 768 (H) / 1920 (W) x 1080 (H)
	Brightness (cd/m <sup>2</sup> )	350	250	250 / 350
	Contrast Ratio	1000:1	1000:1	1000:1
	LCD Color	16.7M	16.7M	16.7M colors
	Viewing Angle (H-V)	170°/160°	178°/ 178°	170°/160°, 178°/178°
	Touchscreen	Projected capacitive type with USB interface	Projected capacitive type with 10-point multi-touch	Projected capacitive type with 10-point multi-touch
System	CPU	6th Generation Intel® mobile ULT Core™ i7/ i5/Celeron® processor	6th Generation Intel® mobile ULT Core™ i7/i5/ Celeron® processor 7th Generation Intel® mobile ULT Core™ i7/i5/ Celeron® processor (by project base)	7th Generation Intel® mobile ULT Core™ i5/ Celeron® processor
	Memory	Two 260-pin 2400/2133MHz dual-channel DDR4 SO-DIMM, 4GB pre-installed (system max.32GB)	Two 260-pin 2400/2133MHz dual-channel DDR4 SO-DIMM, 4GB pre-installed (system max.32GB)	Two 260-pin 2400/2133MHz dual-channel DDR4 SODIMM, 4GB pre-installed (system max.32GB)
	I/O Ports	1 x RJ-11 for 1D/2D barcode reader 4 x USB 2.0 (2 on the side) 4 x USB 3.2 Gen 1 port 1 x HDMI output 2 x GbE LAN port 1 x RS-232/422/485 1 x 12~28V DC jack	1 x RJ-11 for 1D/2D barcode reader 4 x USB 2.0 (2 on the side) 4 x USB 3.2 Gen 1 port 1 x HDMI output 2 x GbE LAN port 1 x RS-232/422/485 1 x 12~28V DC jack	Rear 1 x 1.5kV isolation COM port 1 x 12~28V DC Jack 1 x GbE LAN port 2 x USB 3.2 Gen 1 port Bottom 1 x RJ-11 for barcode scanner 1 x GbE LAN port 2 x USB 3.2 Gen 1 port 1 x HDMI output Side 1 x HDMI input (optional) 2 x USB 2.0 port 1 x Audio out 1 x Mic in
	Storage	2 x 2.5" SATA 6Gb/s accessible HDD bay 1 x mSATA (E-Window)	1 x 2.5" SATA 6Gb/s HDD/SDD bay 1 x mSATA reserved (E-Window)	1 x 2.5" SATA 6Gb/s HDD/SDD bay 1 x mSATA reserved (E-Window)
	Audio	2 x 2W speaker, digital microphone	2 x 2W speaker, digital microphone	2 x 3W Speaker, digital microphone
	LED Function	RFID indicator	RFID indicator	RFID indicator
	OSD Function	1 x LCD on/off 1 x Brightness up 1 x Brightness down 1 x Volume up 1 x Volume down 1 x Touch lock button for cleaning Combinations: 1 x Lock/Unlock OSD 1 x Power on/off	1 x LCD on/off 1 x Brightness up 1 x Brightness down 1 x Volume up 1 x Volume down 1 x Touch lock button for cleaning Combinations: 1 x Lock/Unlock OSD 1 x Power on/off	1 x LCD on/off 1 x Brightness down 1 x Brightness up 1 x Volume down 1 x Volume up 1 x Touch lock (OSD lock included) Combinations: 1 x Auto-dimming on/off
	Auto-dimming	Yes	Yes	Yes
	Expansion	1 x E-Window slot (full-size PCIe Mini slot with PCIe/mSATA/USB)	1 x E-Window slot (full-size PCIe Mini slot with PCIe/mSATA/USB)	1 x E-Window slot (full-size PCIe Mini slot with PCIe/mSATA/USB)
	Wireless	Wi-Fi and Bluetooth	IEEE 802.11 a/b/g/n/ac 2T2R module with Bluetooth V4.1 1 x 2230 A/E key (PCIe x 1/USB 2.0)	IEEE 802.11 a/b/g/n/ac 2T2R module with Bluetooth V4.1 1 x 2230 A/E key (PCIe x 1/USB 2.0)
Physical	Construction Material	ABS+PC plastic with antibacterial material	ABS+PC plastic with anti-bacterial material	ABS + PC plastic with anti-bacterial material
	Mounting	Wall, Stand and Arm VESA 75/100	Wall, Stand and Arm VESA 75/100	Wall, Stand and Arm VESA 75/100
	Net Weight	6.0 kg	7.5 Kg	6.5 kg
	Dimensions (WxHxD) (mm)	435 x 376 x 65	595 x 380 x 61	478.6 x 317.3 x 60.1
Environment	Operating Temperature (°C)	0°C ~ 40°C		
	IP Level	IP65 compliant front panel	IP 65 compliant front panel	IP 65 compliant front panel
	Thermal Solution	Fanless	Fanless	Fanless
Power	Power Requirement	12V~28V DC input	12V~28V DC input	12~28V DC input
	Power Adapter	120W medical power adapter: Input: 90V~264V AC, Output: 19V DC	120W medical power adapter: Input: 90V~264V AC, Output: 19V DC	120W medical power adapter: Input: 90V~264V AC; Output: 19V DC
Certification	CE,FCC Class B Part18 IEC 60601-1:2005+AMD1:2012 (Edition 3.1) IEC 60601-1-2: 2014 (Edition 4.0)		CE,FCC Class B Part18 IEC 60601-1:2005+AMD1:2012 (Edition 3.1) IEC 60601-1-2: 2014 (Edition 4.0)	CE,FCC Class B Part18 IEC 60601-1:2005+AMD1:2012 (Edition 3.1) IEC 60601-1-2: 2014 (Edition 4.0)



# POCm / POCi Series



Series		POCm		POCi
Model		POCm-W22C-ULT3	POCm-W24C-ULT3	POCi-W22C-ULT5
LCD Touch Specification	LCD Size (inch)	21.5"		21.5" (16:9)
	Max. Resolution	1920 (W) x 1080 (H)		
	Brightness (cd/m <sup>2</sup> )	250		
	Contrast Ratio	1000:1		
	LCD Color	16.7M		6bit RGB + Hi FRC
	Viewing Angle (H-V)	170°(H) / 160°(V)	178°(H) / 178°(V)	
	Touchscreen	Projected capacitive type with 10-point multi-touch		
System	CPU	6th Generation Intel® mobile ULT Core™ i7/i5/Celeron® processor		Intel® Core™ i7-8665UE (Whiskey Lake ULT platform) Intel® Core™ i5-8365UE (Whiskey Lake ULT platform)
	Memory	Two 260-pin 2400/2133MHz dual-channel DDR4 SO-DIMM, 4GB pre-installed (system max. 32GB)		DDR4 SODIMM up to 32GB
	I/O Ports	Bottom I/O 1 x DC Jack 2 x HDMI out 2 x GbE LAN port 2 x RS232/422/485 4 x USB 3.2 Gen 1 port 1 x RJ-11 for barcode module	Other 2 x USB 2.0 port (side) 1 x Audio out (side) + 1 x Mic in (side) 1 x Digital Mic (front, bottom)	Bottom I/O 1 x DC Jack 1 x HDMI 1.4 out 1 x Gigabit Isolated LAN (i219 support Intel vPro) 1 x Gigabit Isolated LAN (i211) 1 x Isolated 1.5KV RS232 1 x combo Audio out / Mic in 4 x USB 3.2 Gen 2 port Other 2 x USB 2.0 port (Side)
	Storage	1 x 2.5" Accessible SATA HDD bay 2 x 2280 M key (PCIe x 1/SATA) with RAID 1 x 1630/2230/3030 A/E key (PCIe x 1/USB 2.0)		1 x 2.5" Accessible SATA HDD/SSD bay 1 x M.2 2242/60/80 M key (PCIe x 4)
	Audio	2 x 3W Speaker, digital microphone		2 x 3W speaker
	LED	RFID indicator Battery indicator (color: blue/orange)		RFID indicator Dual LED reading light
	OSD Function	1 x System on/off 1 x Brightness down 1 x Brightness up 1 x Volume down 1 x Volume up 1 x LCD on/off and Touch lock for cleaning		Power on/off Reading light on/off Brightness + Brightness - P1: Backlight & touch lock on/off P2: DICOM Mode button (optional)
	Expansion	1 x E-Window slot (full-size PCIe Mini slot with PCIe/mSATA/USB)		1 x PCIe x4
Wireless	Wi-Fi and Bluetooth	IEEE 802.11 a/b/g/n/ac 2T2R module with Bluetooth V4.1 M.2 2242 A/E key (PCIe x 1/USB 2.0)		IEEE 802.11 ax 2T2R module with Bluetooth V5.0 (M.2 2230)
Physical	Construction Material	ABS+PC plastic with anti-bacterial material		Front Bezel: Aluminum die-casting Rear Cover: ABS+PC plastic with anti-bacterial material
	Mounting	Wall, Stand and Arm VESA 75/100		Wall, Stand and Arm VESA 75/100
	Net Weight	6.8 kg without battery		6.9 kg
	Dimensions (WxHxD) (mm)	543 x 350 x 61	595 x 380 x 61	507.5 x 335.5 x 64.1
Environment	Operating Temperature (°C)	0°C~40°C		0°C ~ 40°C
	IP Level	Front: IP65, Back: IP32 above		Front: IP66, Back: IP54
	Thermal Solution	Fanless		Fanless heatsink without fin
Power	Power Requirement	12V~28V DC input		19V DC input
	Power Adapter	150W medical power adapter		
Certification	CE, FCC Class B Part18 IEC 60601-1:2005+AMD1:2012 ( Edition 3.1) IEC 60601-1-2: 2014 (Edition 4.0)			

## Medical Box PC



Model		HTB-100-HM170
Physical	Color	Silver+Greish blue
	Dimensions (WxDxH)	294 x 209 x 90.2
	Net Weight	2.2 kg
	System Fan	Fanless
	Chassis Construction	Extruded aluminum alloy
Motherboard	CPU	Intel® Core™ i7-6822EQ (2 GHz, quad-core, TDP=25) Intel® Core™ i5-6442EQ (1.9 GHz, quad-core, TDP=25)
	Chipset	Intel® HM170
	System Memory	2 x 260-pin DDR4 SO-DIMM, one 4 GB pre-installed (system max: 32GB)
Storage	Hard Drive	1 x 2.5" SATA 6Gb/s HDD/SSD bay
I/O Interfaces	USB 3.2 Gen 1 (5Gb/s)	4
	USB 2.0	2
	Ethernet	2 x RJ-45 PCIe GbE by Intel® I211 controller
	COM Port	2 x RS-232 (DB-9, with 2.5 kV isolation) 2 x RS-232/422/485 (DB-9, with 2.5 kV isolation)
	Display	1 x VGA, 1 x HDMI 2.0, 1 x iDP (optional)
	Resolution	VGA: Up to 1920 x 1200@60HZ HDMI 2.0: Up to 4096 x 2160@60Hz
	Audio	Realtek ALC662, 5.1-channel High Definition Audio (HDA), Line-in, Line-out, Mic-in
	Wireless	1 x 802.11a/b/g/n/ac 2T2R (optional)
Expansions	PCIe	1 x PCIe x16
	PCIe Mini	1 x Half-size PCIe Mini 1 x Full-size PCIe Mini (supports mSATA, colay with SATA)
	M.2	1 x M.2 A & E key (2230/ USB or PCIe)
Power	Power Input	DC Jack: 12~28V DC
	Power Consumption	19V@4.4A (Intel® Core™ i7-6822EQ with 4 GB memory)
	Adapter	Adapter Power; Vin:90~264VAC; 150W; Dim:85*170*42.5mm; Plug=6.5mm; Cable=1200mm; MEDICAL; Vout:19VDC; Din 4Pin/lock; CCL; R10
Reliability	Mounting	Wall mounting
	Operating Temperature	0°C ~ 40°C with air flow (SSD), 10% ~ 95%, non-condensing
	Storage Temperature	-40°C ~ 70°C with air flow (SSD), 10% ~ 90%, non-condensing
	Operating Shock	Half-sine wave shock 5G; 11ms; 100 shocks per axis
	Operating Vibration	MIL-STD-810G 514.6 C-1 (with SSD)
	Safety / EMC	CE, FCC class B part 18, IEC 60601-1 V3.1, IEC 60601-1-2 V4.0, IEC 62304, ISO 14971
OS	Supported OS	Microsoft® Windows 8, Microsoft® Embedded Standard 7

## AI Box PC



Model		HTB-200-C236
Chassis	Color	White
	Dimension	140 x 171 x 276.6 mm
	System Fan	Smart Fan
	Chassis Construction	Metal housing (SECC)
Motherboard	CPU	Intel® Xeon® E3-1268LV5, 35W TDP Intel® Core™ i5-7500T (Kaby Lake platform), 35W TDP
	Chipset	Intel® C236
	System Memory	Two 260-pin 1600/2133MHz dual-channel ECC & non-ECC unbuffered DDR4 SO-DIMM slots supporting up to 64GB
	Storage	2.5" SATA HDD or SSD
I/O Interfaces	USB	2 x USB 3.2 Gen 1 port, 2 x USB 2.0
	COM	1 x RS-232/422/485
	Ethernet	LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 support LAN2: Intel® I210 PCIe controller
	Display	1 x HDMI output
	Others	1 x Power button 1 x Reset switch 1 x AT/ATX switch
	Expansions	PCIe
	PCIe Mini	1 x Half-size PCIe Mini Slot
Power Input		19V DC in
Power Adapter		100V ~ 240V AC input, 19V DC output, 180W
Environment	Operating Temperature	0°C ~ 35°C 10% ~ 95%, non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis
	Net Weight	2.8 kg
Acceleration Card Supported		NVIDIA Tesla P4 (50W/75W) NVIDIA Tesla T4 (75W) Mustang F100 (<60W) Mustang V100 (<30W)
Supported OS		Windows®10, Linux®

# AUPS Module



Model		AUPS-A10	AUPS-A20	AUPS-B10	AUPS-B20
VESA Type		VESA 75	VESA 75	VESA 75 and 100	VESA 75 and 100
Input Data	Input voltage Uinated/range	DC +12V	DC +9V~+36V	DC +12V	DC +9V~+36V
	Input current rated	1. Adapter is 12V-6A (Load is 60W) 2. Battery is 6V-12A (Load is 60W)		1. Adapter is 12V-9A (Load is 100W) 2. Battery is 12V-9A (Load is 100W)	
	Standby power consumption	0.3A (0.2A if Network Management disabled)			
	Operation with charging current	500mA			
	Operation with charging power consumption	6W		10W	
	Charging time with system ON/OFF	8hrs / 2hrs (Battery empty)			
Output Data	Output voltage for normal operation	DC +12V +/-5%			
	Output voltage for battery operation (approx).	6~8.4V DC6 V (exhaustive discharge protection)		12~16.8V DC12 V (exhaustive discharge protection)	
	Output current	0A~5A		0A~8.3A	
	Efficiency (nominal operation) / power loss at Vin=12V, Iout=80% of full loading	89%	93%	95%	94%
Protection	Short-circuit protection	Yes			
	Exhaustive discharge protection	1. Battery low is 10% of battery capacity 2. ShUTDOWN 5% of battery capacity (Default) 3. The end of battery discharge voltage is 6V			
	EMC / Safety certification	CE, FCC			
Monitoring	Ethernet interface	Web-based, specification 10/100Mbps with RJ-45 connection, Cat. 5 cable			
	USB interface	PC-capable, specification 2.0 with full speed, i.e. 2 Mbit/s. Standard 4-core shielded cable, USB Series "mini B" connector to DC-UPS			
Physical	Dimensions (LxWxH)	152mm x 96mm x 28mm		174mm x 147mm x 35mm	
	Weight	1.2 kg		1.8 kg	
LED Indicator	Green	DC power input			
	Yellow	Battery charging			
	Orange	Battery discharging			
Environment	Operating Tem.	0°C~40°C			
	Storage Tem.	-20°C~50°C			

Note1: Connecting DC input constantly is recommended. Battery will be drained after 14 hours.  
 Note2: System power consumption + AUPS charging power consumption = Total watts of power source

## UPS Modules and Main Buffering Time



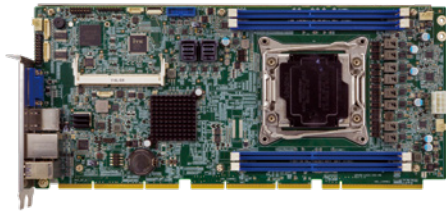
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AFOLUX PPC	AUPS-A10	AUPS-A20	AUPS-B10	AUPS-B20
Under 50W solution				
AFL3-W07A-BT (20W)	110min	110min	220min	220min
AFL3-08A-BT (30W)	75min	75min	150min	150min
AFL3-W10A-BT (33W)	70min	70min	140min	140min
AFL3-12A-BT (42W)	55min	55min	110min	110min
AFL3-W15A-BT (50W)	45min	45min	90min	90min
AFL3-W19A-AL (40W)	55min	55min	110min	110min
50W ~ 100W solution				
AFL3-12C-ULT3 (58W)	-	-	75min	75min
AFL3-W15B-H81 (72W)	-	-	60min	60min
AFL3-W15C-ULT3 (68W)	-	-	65min	65min
AFL3-W19C-ULT3 (63W)	-	-	70min	70min
AFL3-W22C-ULT3 (65W)	-	-	70min	70min

## Battery Module

Model Name	AUPS-A10	AUPS-A20	AUPS-B10	AUPS-B20
Battery Model Name	31603-000072-RS		31603-000073-RS	
Battery type	Li-Ion 2S2P 7.26V		Li-Ion 4S2P 14.52V	
Battery capacity	7.26V 5200 mAH		14.52V, 5200 mAH	
Maximum charge voltage	8.4V		16.8V	
The end of discharging voltage	5.5V		11V	
Recommended charging current (max.)	2.55A		2.55A	
System continuous discharging current (max.)	7.5A		7.5A	
The end of charge condition	255mA / 1Min		255mA / 1Min	
Discharge protection	Over current protection			
Charge protection	Over current protection			
Ambient temperature	0°C~45°C			
Storage temperatur	-20°C~65°C			
Self-discharge rate	340uA~440uA			
Dimensions (LxWxH)	139mm x 47mm x 26mm		165mm x 76mm x 26mm	
Weight	244g		466g	
Cycle life	300 charge / discharge cycles			
Backup 60W / 10Min 100W / 10Min	50W / 10Min		100W / 10Min	
Safety class	CE, FCC, UN38.3, UL			

# PEMUX-XEW1



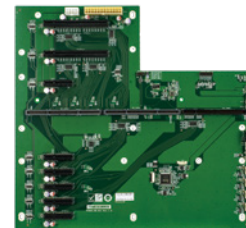
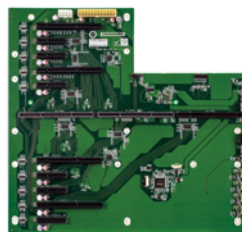
Model	PEMUX-XEW1
Form Factor	PEMUX Full-size CPU card (12 layers)
CPU	LGA2066 socket supports Intel® Xeon W processor
Chipset	Intel® C422
Memory	Four 288-pin Dual-Channel DDR4 ECC RDIMM/LRDIMM supported up to 256GB
BIOS	UEFI BIOS
Super I/O	Fintek F81216D
EC	iWDD
Display Output	1 x IPMI VGA display
Ethernet	LAN1: 1 GbE NIC: Intel® i210-AT with NCSI support LAN2: 10 GbE NIC: Aquantia AQC107
External I/O Interface	2 x USB 2.0 4 x USB 3.2 Gen 1 (5Gb/s)
Internal I/O Interface	1 x M.2 2280 1 x USB DOM header 2 x mini SAS 8643 (for 8 x SATA 6GB/s) 2 x RS-232 by pin header 2 x USB 3.2 Gen 1 (5Gb/s) pin header

Front Panel	1 x Front Panel (Power LED, HDD LED, Speaker, Power Button, Reset Button )
Audio	2 x 5-pin pin header
TPM	2 x 10-pin pin header
SMBus	1 x SMBus to backplane
Expansion	56-Lane PCIe signal via golden finger
Watchdog Timer	software Programmable support 1~255 sec. System reset
Fan Connector	1 x 4-pin Smart fan connector (CPU fan) 2 x 4-pin Smart fan connector (System CPU fan)
Power Supply	5V/12V, AT/ATX support
Operating Temperature	-20°C ~ 40°C
Operating Humidity	5% ~ 95%, non-condensing
Dimensions	338.58 mm x 150.5 mm
Weight	700g

# PEMUX Backplane

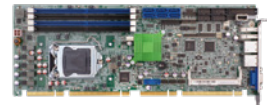
## Accelerate to The Future

Server grade backplane accommodates multiple PCIe x8 and PCIe x4 add-on cards. It is specially designed for intensive AI computing applications such as deep learning and inference engine that requires more numbers of PCIe slot for accelerator cards. Given the multiple PCIe slots support, it provides a more efficiency solution for end-users.



Backplane		PEMUX-DB-10S1	PEMUX-DB-8S1
Total	Slot	11	9
PCIe	x16		2
	x8	4	
	x4	6	6
	x1		
PSU type		24+8pin ATX	24+8pin ATX
Chsaais Option		RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G

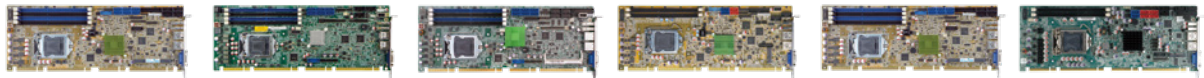
# PICMG 1.3



Model	HPCIE-C236	HPCIE-Q170	SPCIE-C246	SPCIE-C236
CPU Socket	LGA 1151	LGA 1151	LGA1151	LGA1151
CPU Type	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Xeon® E3, 8th/9th generation Core™ i9/i7/i5/i3, Pentium® or Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor
Chipset	Intel® C236	Intel® Q170	Intel® C246	Intel® C236
Memory	Two 260-pin 1866/2133 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)	Two 260-pin 1866/2133 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)	Four 288-pin 2666MHz dual-channel DDR4 SDRAM unbuffered DIMMs support up to 64GB ECC & non-ECC	Four 288-pin 1866/2133 MHz Dual-Channel DDR4 ECC & non-ECC unbuffered DIMM supported up to 64GB
Display Interface	Dual display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x HDMI 1 x DP	Triple display supported 1 x VGA 1 x iDP interface
Ethernet	LAN1: Intel® I219-LM with Intel® AMT 11.0 support LAN2: Intel® I211-AT Ethernet controller	LAN1: Intel® I219-LM with Intel® AMT 11.0 support LAN2: Intel® I211-AT Ethernet controller	LAN1: Intel® I219LM PHY LAN2: Intel® I211-AT PCIe controller (Co-lay I210-AT)	LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 supported LAN2: Intel® I210 PCIe controller
iRIS Remote Management Module	N/A	N/A	N/A	1 x iRIS-2400 slot (Optional)
I/O Interface	1 x 6-pin wafer for KB/MS 2 x RS-232/422/485 2 x USB 3.2 Gen 1 4 x USB 2.0	1 x 6-pin wafer for KB/MS 2 x RS-232/422/485 2 x USB 3.2 Gen 1 4 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x RS-422/485 3 x RS-232 4 x USB 3.2 Gen 1 7 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 2 x RS-232 2 x RS-232/422/485 4 x USB 3.2 Gen 1 7 x USB 2.0
Storage Interface	1 x mSATA (SATA & USB signal) 2 x SATA 6Gb/s (RAID 0/1 supported)	1 x mSATA (SATA & USB signal) 2 x SATA 6Gb/s (RAID 0/1 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
Audio	Supports by IEI AC-KIT-892HD-R10 audio kit			
Digital I/O	8-bit programmable digital I/O			
Power Consumption	5V@0.13A, 12V@7.89A, 3.3V@0.10A, 5VSB@0.20A (Intel® Xeon® E3-1275 v5 3.60 GHz with two 16 GB 2133 MHz DDR4 memory)	5V@0.15A, 12V@8.39A, 3.3V@0.11A, 5VSB@0.21A (Intel® Core™ i7-6700K 4.0GHz with two 16 GB 2133 MHz DDR4 memory)	5V@3.12A, 12V@6.85A, 3.3V@1.13A, 5VSB@0.15A (4.0 GHz Intel® Core™ i7-8700K CPU with four 16 GB 2666 MHz DDR4 memory)	5V@3.22A, 12V@6.81A, 3.3V@1.21A, 5VSB@0.18A (Intel® Xeon® E3-1275 v5 3.60 GHz CPU with 64GB (four 16GB) 2133 MHz DDR4 memory)
Watchdog Timer	Software programmable supports 1~255 sec. system reset			
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing			
Expansion Slot	N/A	N/A	1 x M.2 M key 1 x PCIe x16 & 4 x PCIe x1 signal via golden finger 4 x PCI signal via golden finger	1 x Full-size PCIe Mini card slot (support mSATA)
CPU Cooler	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11



# PICMG 1.3



Model	SPCIE-C2260-i2	PCIE-Q370	PCIE-Q170	PCIE-H810	PCIE-Q870-i2	PCIE-Q670-R20
CPU Socket	LGA 1150	LGA1151	LGA1151	LGA 1150	LGA 1150	LGA 1155
CPU Type	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	8th/9th Generation Core™ i9/i7/i5/i3, Celeron® and Pentium® processor	6th generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor
Chipset	Intel® C226	Intel® Q370	Intel® Q170	Intel® H81	Intel® Q87	Intel® Q67
Memory	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)	Four 288-pin 2666MHz dual-channel DDR4 SDRAM unbuffered DIMMs support up to 64GB	Four 288-pin 1866/2133 MHz dual-channel non-ECC unbuffered DDR4 DIMMs (system max. 64 GB)	Two 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 16 GB)	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM DIMMs (system max. 16 GB)
Display Interface	Dual display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x DP PCIE-Q370-HDMI 1 x HDMI 1 x DP	Triple display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface	1 x VGA 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)
Ethernet	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® I219LM PHY LAN2: Intel® I211-AT PCIe controller (Co-lay I210-AT)	LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 supported LAN2: Intel® I210 PCIe controller	LAN1: Realtek RTTL8111E PCIe controller LAN: Realtek RTTL8111E PCIe controller	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support
iRIS Remote Management Module	1 x iRIS-2400 slot	N/A	1 x iRIS-2400 slot (optinoal)	N/A	1 x iRIS-2400 slot	N/A
I/O Interface	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 4 x USB 3.2 Gen 1 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x RS-422/485 3 x RS-232 4 x USB 3.2 Gen 1 7 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 2 x RS-232 2 x RS-232/422/485 4 x USB 3.2 Gen 1 7 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 3.2 Gen 1 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 4 x USB 3.2 Gen 1 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 8 x USB 2.0
Storage Interface	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	2 x SATA 3Gb/s 2 x SATA 6Gb/s	6 x SATA 6Gb/s (RAID 0, 1, 5, 10 supported)	2 x SATA 6Gb/s (RAID 0/1/5/10 supported) 4 x SATA 3Gb/s
Audio	Supports by IEI AC-KIT-892HD-R10 audio kit				IEI AC-KIT-892HD-R10 7.1-channel HD Audio kit via the on-board 10-pin header connector	
Digital I/O	8-bit programmable digital I/O					
Power Consumption	5V@3.55A, 12V@0.37A, Vcore_12V@7.61A, 3.3V@1.55A, 5VSB@0.13A (Intel® E3-1240 v3 3.4GHz CPU with 16 GB (four 4GB) 1333 MHz DDR3 memory)	5V@3.12A, 12V@6.85A, 3.3V@1.13A, 5VSB@0.15A (4.0 GHz Intel® Core™ i7-8700K CPU with four 16 GB 2666 MHz DDR4 memory)	5V@3.12A, 12V@6.85A, 3.3V@1.13A, 5VSB@0.15A (Intel® Core™ i7-6700K 4.0GHz CPU with 64GB (four 16GB) 2133 MHz DDR4 memory)	5V@3.41A, 12V@0.35A, Vcore_12V@7.52A, 3.3V@1.41A, 5VSB@0.12A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)	5V@3.55A, 12V@0.37A, Vcore_12V@7.61A, 3.3V@1.55A, 5VSB@0.13A (3.4GHz Intel® Qual CoreCPU with four GB 1333 MHz DDR3 memory)	5V@3.98A, 12V@0.38A, Vcore_12V@7.81A, 3.3V@1.61A, 5VSB@0.15A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)
Watchdog Timer	Software programmable supports 1~255 sec. system reset					
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing
Expansion Slot	1 x Full-size PCIe Mini card slot (support mSATA)	1 x M.2 M key 1 x PCIe x16 & 4 x PCIe x1 signal via golden finger 4 x PCI signal via golden finger	1 x Full/Half-size PCIe Mini card slot 4 x PCI signal via golden finger	1 x Full-size PCIe Mini card slot (support mSATA)	1 x Full-size PCIe Mini card slot (support mSATA)	
CPU Cooler	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10

# PICMG 1.3 Passive Backplane for Half-Size CPU Card

PAC series wall-mount chassis
  4U rack-mount chassis

PICMG 1.3 (PCIe+PCI)	Model	HPE2-3S1	HPXE2-5S1	HPXE2-6S1	HPXE2-7S1	HPXE2-8S1
Total Slot		5	5	6	7	8
Expansion Slots	PCIe x16	1	1	1		
	PCIe x8				2	2
	PCIe x4	1				
	PCIe x1					
	PCI-X					
	PCI		2	3	3	4
PSU Type			24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX
Chassis Option		PAC-400AI PR-1500G	PR-1500G	PAC-1000 PAC-106G	PAC-700G PAC-1700G	PAC-125G
		RACK-500AI	RACK-500G			RACK-3000G / RACK-360G
Note		ATX power	ATX power	ATX power	ATX power	ATX power

# PICMG 1.3 Backplane

PAC series wall-mount chassis
  4U rack-mount chassis

Backplane		SPE-4S	SPE-6S	SPE-9S	SPXE-11S	SPXE-14S
Total	Slot	4	6	7	11	14
PCIe	x16					
	x8	2 (x16 connector)		1 (x16 connector)		1 (x16 connector)
	x4	1	5	3	6 (x16 connector)	
	x1					12 (x4 connector)
	PCI-X					
	PCI			3	4	
PSU Type		24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+8-pin ATX	24+8-pin ATX
Chassis Option		PAC-106G PAC-1000G	PAC-106G PAC-1000G	PAC-125G	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G

# PICMG 1.3 Passive Backplane

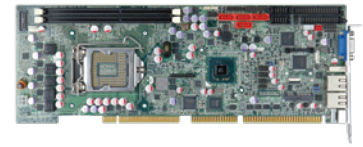
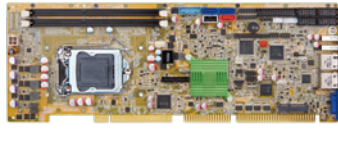
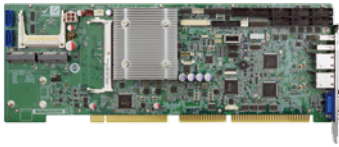
PAC series wall-mount chassis
  4U/5U rack-mount chassis
  1U/2U rack-mount chassis

PICMG 1.3 (PCIe+PCI)	Model	PE-2SD1	PE-2SD2	PE-3S1	PE-4S	PE-4S2	PE-5S	PE-5S2	PE-6S	PE-6S2	PE-6SD	PE-6SD3
Total Slot		2	2	5	4	4	5	5	6	6	5	5
Expansion Slots	PCIe x16 *	1		1	1	1	1	1	1	1	1	1
	PCIe x4			1	1		1			1		1
	PCIe x1											
	PCI-X Slots							3	2		3	
	PCI Slots		1		1	2	2		2	3		2
USB Connectors by Pin Header		4	4		4	4	4	4	4	4	4	4
PSU Type		24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX
Chassis		RACK-1150-PE	RACK-1150-PE	RACK-500AI	N/A	N/A	RACK-500G	RACK-500G	RACK-305G RACK-360G RACK-3000G PAC-1700G PAC-125	PAC-106G PAC-1000G	N/A	N/A
	Note	1U Type	1U Type								2U Type	2U Type

PICMG 1.3 (PCIe+PCI)	Model	PE-7S	PE-7S2	PE-8S	PE-9S	PE-10S	PE-10S2	PE-13SD	PXE-9S2	PXE-12S	PXE-13S	PXE-19S2
Total Slot		7	7	8	9	10	10	13	9	12	13	19
Expansion Slots	PCIe x16 *	1	1	1	1	1	1	1/1	1	1	1	1
	PCIe x4							1/0	3			
	PCIe x1	2	4	3	4	4	4	0/4	0		3	1
	PCI-X Slots								0	4		
	PCI Slots	3	1	3	3	4	4	2/2	4	4	8	16
USB Connectors by Pin Header		4	4	4	4	4	4	8	4	4	4	4
PSU Type		24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	Dual 24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX
Chassis		PAC-1700G	PAC-1700G	PAC-125G	N/A	RACK-305G RACK-360G RACK-3000G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G
	Note							Dual System Backplane	PCIe to PCIe Switch Backplane	PCIe to PCI-X Bridge Backplane	PCIe to PCI Bridge Backplane	

\*When using a PCIe x16 add-on card, the length of the card must not exceed 167mm or 6.57 inches.

# Full-size PICMG 1.0



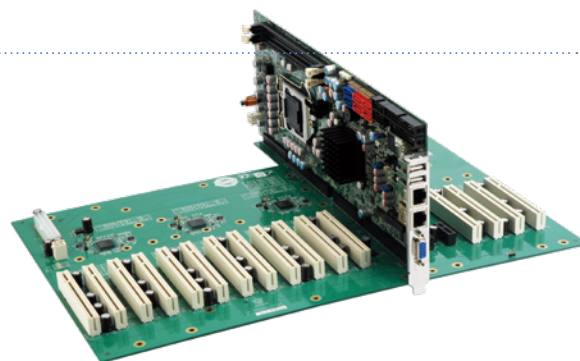
Model	WSB-BT	WSB-H810	WSB-H610
CPU Socket	On board	LGA 1150	LGA 1155
CPU Type	Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W) Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor
Chipset	N/A	Intel® H81	Intel® H61
Memory	One 204-pin 1066/1333 MHz singlechannel DDR3L SDRAM unbuffered DIMM (system max. 8 GB)	Two 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 16 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 & DDR3L (1.35V) DIMMs supported (system max. 16 GB)
Display Interface	Triple display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP	Dual display supported 1 x VGA 1 x iDP interface	1 x VGA 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)
Ethernet	LAN1: Intel® I211-AT PCIe controller LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I217-V LAN PHY LAN2: Intel® I211-AT Ethernet controller	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller
I/O Interface	1 x KB/MS 1 x LPT 1 x USB 3.2 Gen 1 (5Gb/s) 2 x RS-232/422/485 4 x RS-232 6 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 2 x USB 3.2 Gen 1 (5Gb/s) 4 x RS-232 8 x USB 2.0	1 x 6-pin wafer for KB & MS 1 x FDD 1 x LPT 1 x PS/2 KB/MS 1 x RS-422/485 2 x RS-232 7 x USB 2.0
Storage Interface	1 x mSATA (colay SATA2, supports SATA 3Gb/s signal only) 1 x CF Type II 2 x SATA 3Gb/s	1 x SATA 3Gb/s 2 x SATA 6Gb/s	4 x SATA 3Gb/s
Audio	IEI AC-KIT-892HD-R10 7.1-channel HD Audio kit via the on-board 10-pin header connector		
Digital I/O	8-bit digital I/O		
Power Consumption	3.3V@0.009A, 5V@4.68A, 5Vsb@0.008A, 12V@1.143A (Intel® Celeron® J1900 1.99 GHz 10W CPU with 8GB 1600MHz DDR3L memory)	5V@3.41A, 12V@0.35A, Vcore_12V@7.52A, 3.3V@1.41A, 5VSB@0.12A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)	5V@4.53A, 12V@0.19A, Vcore_12V@7.81A, 5VSB@0.18A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset		
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: -10°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing
Expansion Slot	1 x Full/Half-size PCIe Mini card slot (support mSATA)	1 x Full/Half-size PCIe Mini card slot (support mSATA)	1 x Full/Half-size PCIe Mini card slot
CPU Cooler	Heatsink	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10 CF-115XF-R10

# » PCI/PX Backplane

Supports PCI and ISA slot on one backplane!  
For PICMG 1.0 Single Board Computer

The advantages of using the PICMG 1.0 card are numerous:

1. Supports standard PICMG version 1.0 slot on the PCI/PX series passive backplane
2. Compatible with all available PCI/ISA cards. PCI/PX backplane is also integrated with the ROCKY series card slot



PAC series wall-mount chassis
  4U/5U rack-mount chassis
  1U/2U rack-mount chassis

RoHS Ready



RoHS Ready



RoHS Ready



RoHS Ready



RoHS Ready



RoHS Ready



Model	PCI-4S-RS-R40	PCI-5S-RS-R40	PCI-5S2A-RS-R40 PCI-5S2-RS-R40	PCI-6S-RS-R40	PCI-7S-RS-R41	PCI-8S-RS-R40
Total Slot	4	5	5	6	7	8
PCI Slot	3	3	4	4	4	4
ISA Slot	1	2	1	2	3	4
PSU Type	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT
Chassis	N/A	PAC-1000G	RACK-500G	PAC-106G PAC-1000G	PAC-1700G	N/A

RoHS Ready



RoHS Ready



RoHS Ready



RoHS Ready



RoHS Ready



RoHS Ready



Model	PCI-10S-RS-R41	PCI-10S2-RS-R41	PX-10S-RS-R50	PCI-12S-RS-R40	PCI-13SD-RS-R40	PCI-14S-RS-R40
Total Slot	10	10	10	12	13	14
PCI Slot	4	4	7	4	3+4	4
ISA Slot	5	5	3	7	3+3	9
PSU Type	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT
Chassis	PAC-125G	N/A	PAC-125G	RACK-3000G	RACK-305G RACK-360G RACK-3000G	N/A
Note					For Dual System	

RoHS Ready



RoHS Ready



RoHS Ready



RoHS Ready



Model	PCI-14S2-RS-R40	PCI-14S3-RS-R40	PX-14S3-RS-R50	PX-14S5-RS-R50
Total Slot	14	14	14	14
PCI Slot	4	4	12	7
ISA Slot	8	9	2	6
PSU Type	ATX/AT	ATX/AT	ATX/AT	ATX/AT
Chassis	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G

RoHS Ready



RoHS Ready



RoHS Ready

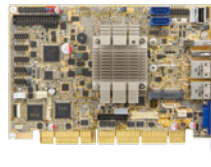
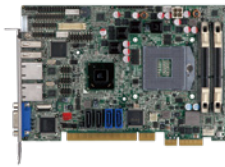


RoHS Ready



Model	PCI-2SD2-RS-R41	PCI-5SD6-RS-R40	PCI-5SDA-RS-R40	PCI-6SD-RS-R40
Total Slot	2	6	6	6
PCI Slot	R2	L2+R2	L2+R2	L1+R1
ISA Slot				L1+R1
PSU Type	ATX/AT	ATX	ATX/AT	ATX
Chassis	RACK-1150G	RACK-220G	RACK-220G	RACK-220G

# » Half-size PICOe, ISA Selection Guide



Model	PICOe-HM650	PCISA-BT	IOWA-LX
CPU Socket	Socket G2	On board	On board
CPU Type	Socket 988B Intel® Mobile Core™ i7/i5/i3 or Celeron® CPU	Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W) Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)	AMD Geode™ LX600
Chipset	Intel® HM65	N/A	AMD Geode™ CS5536
Memory	Two 204-pin 1333/1066 MHz dual-channel DDR3 SO-DIMMs supported (system max. 16 GB)	One 204-pin 1066/1333 MHz single-channel DDR3L SDRAM unbuffered DIMM (system max. 8 GB)	On-board 128MB 200/266 MHz DDR SDRAM One 200-pin 200/266 MHz DDR SO-DIMM (system max. 512MB)
Display Interface	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x iDP interface	1 x VGA
Ethernet	LAN1: Realtek RTL8111E GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E GbE controller	LAN1: Intel® I211-AT PCIe controller LAN2: Intel® I211-AT PCIe controller	10/100Mbps Realtek RTL8100C Ethernet controller
I/O Interface	1 x 6-pin wafer for KB & MS 1 x LPT 1 x RS-422/485 2 x RS-232 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 3.2 Gen 1 8 x USB 2.0	1 x Infrared interface 1 x LPT 1 x PS/2 KB/MS 1 x RS-422/485 2 x RS-232 4 x USB 2.0 (by pin header)
Storage Interface	2 x SATA 3Gb/s 2 x SATA 6Gb/s	1 x mSATA (colay SATA2, supports SATA 3Gb/s signal only) 2 x SATA 3Gb/s	1 x CF Type II 1 x FDD 1 x IDE 2 x SATA (RAID 0, 1)
Audio	IEI AC-KIT-892HD-R10 7.1-channel HD Audio kit via the on-board 10-pin header connector		Realtek ALC203 with AC'97 codec
Digital I/O	8-bit digital I/O		
Power Consumption	5V@3.99A, 12V@0.43A, Vcore_12V@3.80A, 5VSB@0.06A (2.70GHz Intel® Core™ i7-2620M with two 2 GB 1333 MHz DDR3 memory)	5V@1.55A, 12V@0.74A (Intel® Atom™ E3845 1.91GHz CPU, one 8 GB 1600 MHz memory)	5V@1.51A, 5Vsb@0.09A (On-board AMD Geode™ LX600 CPU 366 MHz with on-board 128MB 200 MHz DDR memory and 512MB 333 MHz DDR memory)
Watchdog Timer	Software programmable supports 1~255 sec. system reset		
Operation Environment	Temperature Range: -10°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing
Expansion Slot	NA	1 x PCIe Mini slot	NA
CPU Cooler	CF-989A-RS-R12	NA	Heatsink (fanless)

## IP/IPX Series Backplane

Supports PCI and ISA slot on one backplane!  
For half-size PCISA series single board computers

The advantages of using the PCISA card are numerous:

1. Supports standard PISA version 1.0 slot on the IP/IPX series passive backplane.
2. Compatible with all available PCI/ISA cards. IP/IPX backplane is also integrated with the PCISA series card slot.

 PAC series wall-mount chassis  4U rack-mount chassis



Model	IP-3S-RS	IP-4S-RS	IP-4S2A-RS	IP-4S4-RS	IP-5SA2-RS
Total Slot	3	4	4	4	5
PCI Slot	2	3	3		4
ISA Slot				3	
PSU Type	AT	AT	ATX	AT	ATX
Chassis	PAC-53GH	PAC-400G PAC-42GH	PAC-400G	PAC-400G PAC-42GH	PR-1500G



Model	IP-6S-RS	IP-6SA-RS	IPX-9S-RS	IP-10S-RS	IPX-13S-RS
Total Slot	6	6	9	10	13
PCI Slot	3	3	8	4	12
ISA Slot	2	2		5	
PSU Type	AT	ATX	ATX/AT	ATX/AT	ATX/AT
Chassis	PAC-1000G	PAC-106G PAC-1000G	PAC-125G	PAC-125G	RACK-305G RACK-360G RACK-3000G

## BP Series Backplane

 PAC series wall-mount chassis  4U rack-mount chassis



Model	BP-3S-RS-R40	BP-4S-RS-R40	BP-5S-RS-R40	BP-6S-RS-R40	BP-7S-RS-R40	BP-8S-RS-R41	BP-10S-RS-R40
Total Slot	3	4	5	6	7	8	10
ISA Slot	3	4	5	6	7	8	10
PSU Type	AT	AT	AT	AT	AT	AT	AT
Chassis	PAC-53GH	PAC-400G PAC-42GH	PR-1500G	PAC-106G PAC-1000G	PAC-700G PAC-1700G	N/A	PAC-125G

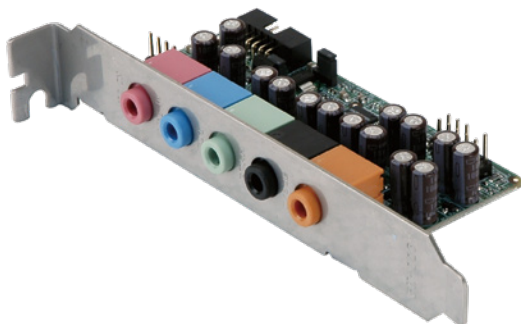


## » PCI/PICoE Backplane

PAC series wall-mount chassis
  4U rack-mount chassis

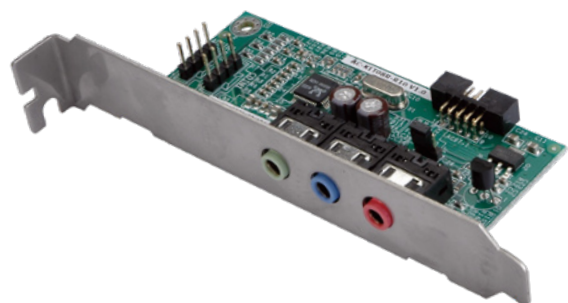
PCIe/PCI		HPE-3S1	HPE-3S2	HPE-4S1	HPE-4S2	HPE-5S1	HPE-5S2	HPE-6S1	HPE-8S
Total Slot		3	3	4	4	5	5	6	7
Expansion Slots	PCI	2	1	3	2	4	3	4	4
	PCIe	x4	1		1		1	1	
		x1							
Chassis		N/A	N/A	PAC-42GH PAC-400G	PAC-42GH PAC-400G	PR-1500G RACK-500G	PR-1500G RACK-500G	N/A	N/A

## » AC-KIT-892HD



- Realtek ALC892 HD Audio codec IC supported
- Five audio jacks for microphone, 7.1+2-channel high definition audio input and output
- High performance 7.1+2-channel high definition audio board provides 7.1-channel sound playback and multiple streaming through the front panel stereo outputs
- Digital to Analog Converter (DAC) with 97dB Signal to Noise Ratio (SNR)
- Analog to Digital Converter (ADC) with 90dB Signal to Noise Ratio (SNR)
- All the Digital to Analog Converter (DAC) supports 44.1k/48k/96k/192kHz sampling rate
- All the Analog to Digital Converter (ADC) supports 44.1k/48k/96kHz sampling rate
- Driver supports Windows® 2000/2003/XP/VISTA/7 (32/64 bits) and Linux (Ubuntu or Debian)
- CE/FCC compliant

## » AC-KIT08R



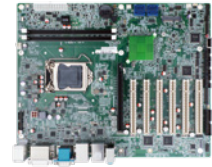
- Realtek ALC655 AC'97 audio codec IC supported
- Three audio jacks for microphone, 5.1-channel AC'97 audio input and output
- Full duplex AC'97 2.3 compatible 5.1-channel audio codec designed for PC multimedia system
- Supports double sampling rate (96kHz) of DVD audio playback
- Driver supports Windows® 2000/2003/XP/VISTA/7 (32/64 bits) and Linux (Ubuntu or Debian)
- CE/FCC compliant

## » IO-KIT-001-R20



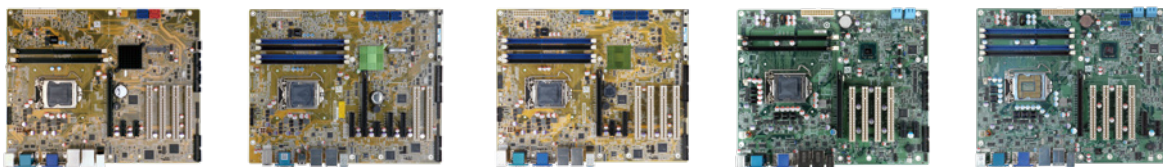
- 26-pin header for DVI (from main board), pitch=2.0 mm
- 2 x 8-pin header for USB 1.1/2.0 (from main board, four sets), pitch=2.54 mm
- DVI-D connector on edge
- Four USB 1.1/2.0 connectors on edge
- CE/FCC compliant

# Industrial Motherboard



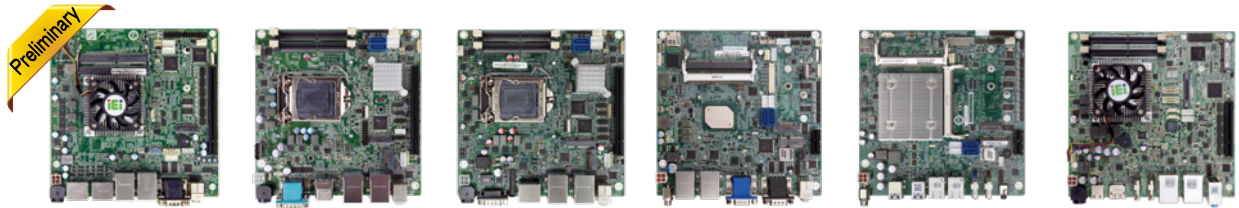
Model	IMBA-Q370	IMBA-C2360-i2	IMBA-Q170-i2	IMBA-H112	IMBA-H110
CPU Socket	LGA1151	LGA1151	LGA1151	LGA1151	LGA1151
CPU Type	8th generation Intel® Core™ i7/i5/i3/Pentium® and Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	6th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor	6th generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor	6th generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor
Chipset	Intel® Q370	Intel® C236	Intel® Q170	Intel® H110	Intel® H110
Memory	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Two 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Two 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)
Display Interface	Triple independent display support 1 x HDMI 2.0 1 x DVI-I 1 x iDP interface	Triple independent display support 1 x HDMI 2.0 1 x DVI-D 1 x VGA 1 x iDP interface	Triple independent display support 1 x HDMI 2.0 1 x DVI-D 1 x VGA 1 x iDP interface	Dual independent display support 1 x VGA 1 x HDMI 1 x iDP interface	Dual independent display support 1 x DVI-I 1 x HDMI 1 x iDP interface
Ethernet	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I219LM with Intel® AMT 11.0 support	LAN1: Intel® I219LM with Intel® AMT 11.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® I219LM with Intel® AMT 11.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® I219V PHY LAN2: Intel® I211 PCIe controller	LAN1: Intel® I219V PHY LAN2: Intel® I211 PCIe controller
iRIS Remote Management Module	N/A	1 x iRIS-2400 slot	1 x iRIS-2400 slot	N/A	N/A
I/O Interface	1 x PS/2 KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 4 x USB 2.0 8 x USB 3.2	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 5 x USB 3.2 Gen 1 7 x USB 2.0	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 5 x USB 3.2 Gen 1 7 x USB 2.0	1 x KB/MS 1 x LPT 1 x RS-232/422/485 4 x USB 3.2 5 x RS-232 5 x USB 2.0	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 4 x USB 3.2 Gen 1 5 x USB 2.0
Storage Interface	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	3 x SATA 6Gb/s	4 x SATA 6Gb/s
Audio	Realtek ALC662 HD Audio codec				
Digital I/O	8-bit programmable I/O (8-bit GPIO is for programming I/O)			N/A	8-bit programmable I/O (8-bit GPIO is for programming I/O)
Power Consumption	3.3V@1.65A, 5V@3.4A, 12V@8.58A, 5VSV@3.4A (Intel® Core™ i7-8700K up to 4.60 GHz CPU with 32GB 2600MHz DDR4 memory)	3.3V@1.51A, 5V@3.31A, 12V@9.02A, 5VSV@3.7A (Intel® Xeon® E3-1275 v5 3.60 GHz CPU with 32 GB (four 8GB) 2133 MHz DDR4 memory)	3.3V@1.65A, 5V@3.4A, 12V@8.58A, 5VSV@3.4A (Intel® Core™ i7 6700K 4.0GHz CPU with 32 GB (Four 8 GB) 2133 MHz DDR4 memory)	3.3V@1.53A, 5V@2.95A, 12V@8.38A, 5VSV@3.2A (4.0 GHz Intel® Core™ i7-6700K CPU with two 8 GB 2133 MHz DDR4 memory)	3.3V@1.53A, 5V@2.95A, 12V@8.38A, 5VSV@3.2A (Intel® Core™ i7 6700K 4.0GHz CPU with 16GB (two 8GB) 2133 MHz DDR4 memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset				
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing				
Expansion Slot	1 x Full-size PCIe Mini card slot (support mSATA) 1 x M.2 (A key) 1 x M.2 (M Key) 1 x PCIe x16 (Gen3) (share x16 signal with 1 x8 & 1 x4 slot) 1 x PCIe x8 (Gen3) 2 x PCIe x4 (Gen3) 2 x PCI slot	1 x Full-size PCIe Mini card slot (support mSATA) 2 x PCIe x8 (Gen3) 3 x PCIe x4 (Gen3) 2 x PCI slot	1 x Full-size PCIe Mini card slot (support mSATA) 2 x PCIe x8 (Gen3) 3 x PCIe x4 (Gen3) 2 x PCI slot	1 x Full-size PCIe Mini card slot (support mSATA) 1 x PCIe x16 slot (Gen3) 1 x PCIe x4 4 x PCI slot	1 x Full-size PCIe Mini card slot (support mSATA) 1 x PCIe x16 slot (Gen3) 6 x PCI slot
CPU Cooler	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10

# Industrial Motherboard



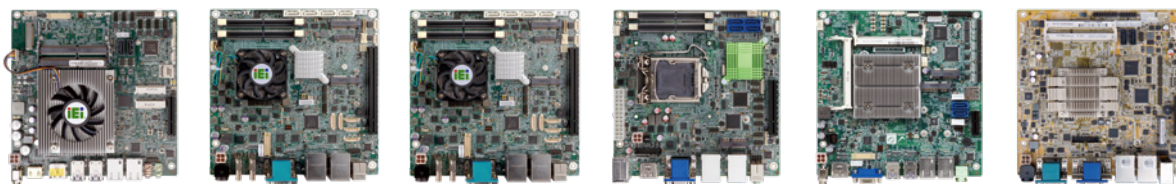
Model	IMBA-H810	IMBA-C2260-i2-R11	IMBA-Q870-i2	IMBA-H610	IMBA-Q670-R30
CPU Socket	LGA1150	LGA1150	LGA1150	LGA1155	LGA1155
CPU Type	4th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium® Dual, Celeron® processor
Chipset	Intel®H81	Intel® C226	Intel® Q87	Intel® H61	Intel® Q67
Memory	Two 240-pin 1333/1600 MHz dual-channel DDR3 SDRAM unbuffered DIMM (system max. 16 GB)	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM ECC and non-ECC unbuffered DIMMs (system max. 32 GB)	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM DIMM (system max. 16 GB)	Four 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMM (system max. 32 GB)
Display Interface	Dual independent display support 1 x DVI-D 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface	Triple display supported 1 x VGA 1 x DVI-D 1 x HDMI 1 x iDP interface	Dual display supported 1 x VGA 1 x DVI-D	Dual display supported 1 x VGA 1 x HDMI 1 x DVI-D
Ethernet	LAN1: Intel® I217-LM with Intel® AMT 9.0 support LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support
iRIS Remote Management Module	N/A	1 x iRIS-2400 slot	1 x iRIS-2400 slot	N/A	N/A
I/O Interface	1 x IR 1 x PS/2 for KB/MS 1 x RS-232/422/485 1 x USB 2.0 Type A 2 x USB 3.2 Gen 1 5 x RS-232 6 x USB 2.0	1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 4 x USB 3.2 Gen 1 5 x RS-232 8 x USB 2.0	1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 4 x USB 3.2 Gen 1 5 x RS-232 8 x USB 2.0	1 x iFC 1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 5 x RS-232 10 x USB 2.0	1 x iFC 1 x LPT 1 x PS/2 KB & MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 2 x USB 3.2 Gen 1 5 x RS-232 10 x USB 2.0
Storage Interface	2 x SATA 3Gb/s 2 x SATA 6Gb/s	6 x SATA 6Gb/s (RAID 0/1/5/10 supported) 1 x mSATA (colay SATA port 6) (support SATA 6Gb/s signal only)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported) 1 x mSATA (colay SATA port 6) (support SATA 6Gb/s signal only)	4 x SATA 3Gb/s	2 x SATA 6Gb/s 4 x SATA 3Gb/s
Audio	Realtek ALC662 HD Audio codec			Realtek ALC892 HD Audio codec	Realtek ALC662 HD Audio codec
Digital I/O	8-bit programmable I/O (8-bit GPIO is for programming I/O)			8-bit digital I/O (4-bit input/4-bit output)	
Power Consumption	3.3V@0.83A, 5V@2.2A, 12V@3.88A, 5VSB@0.3A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)	3.3V@0.57A, 5V@4.50A, 12V@0.14A, Vcore_12V@5.20A, 5VSB@0.19A (Intel® E3-1240 v3 3.4GHz CPU with 16 GB (four 4 GB) 1333 MHz DDR3 memory)	3.3V@0.66A, 5V@4.34A, 12V@0.16A, Vcore_12V@4.01A, 5VSB@0.21A (Intel® Core™ i7-4770K 3.90 GHz CPU with four 1333 MHz 4 GB DDR3 DDR3 memory)	3.3V@1.27A, 5V@3.87A, 12V@0.54A, Vcore@7.67A, 5VSB@0.15A (Intel® Core™ i7-2600K 3.40GHz CPU with two 1333 MHz 2 GB DDR3 Memory)	3.3V@1.65A, 5V@6.31A, 12V@0.18A, Vcore@7.88A, 5VSB@0.15A (Intel® Core™ i5-2400 3.10GHz CPU with four 1333 MHz 4 GB DDR3 memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset				
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing			
Expansion Slot	1 x PCIe x 16 2 x PCIe x 1 4 x PCI 1 x PCIe Mini (support mSATA)	1 x PCIe x16 slot 3 x PCIe x4 slot Default setting: 1 x PCIe x8, 2 x PCIe x4 Optional setting: 1 x PCIe x16 by BIOS setting 1 x PCIe x1 slot 2 x PCI slot	1 x PCIe x16 slot (Gen 3) 1 x PCIe x4 slot 1 x PCIe x1 slot 4 x PCI slots	1 x PCIe x16 2 x PCIe x1 4 x PCI	1 x PCIe x16 1 x PCIe x4 1 x PCIe x1 4 x PCI
CPU Cooler	CF-115XA-R10 CF-115XE-R10	CF-115XA-R10 CF-115XE-R10	CF-115XA-R10 CF-115XE-R10	CF-115XA-R10 (for 1U chassis) CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	CF-115XA-R10 (for 1U chassis) CF-115XC-R10 CF-115XD-R10 CF-115XE-R10

# Mini-ITX



Model	KINO-V1000/R1000	KINO-DH310	KINO-DH110	KINO-DAL	tKINO-AL	gKINO-DMF
CPU Socket	On Board	LGA1151	LGA1151	On Board	On Board	On Board
CPU Type	AMD® Ryzen™ Embedded V1000/R1000 series on board SoC	8th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor	6th/7th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Atom™/Celeron®/Pentium® on-board SoC	AMD G-series on board SoC Merlin Falcon
Chipset	AMD® Ryzen™ Embedded V1000/R1000 series on board SoC	Intel® H310	Intel® H110	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Atom™/Celeron®/Pentium® on-board SoC	AMD G-series on board SoC Merlin Falcon
Memory	2 x SO-DIMM DDR4 2400MHz up to 64GB	2 x 260-pin 2666/2400 MHz dual-channel DDR4 SDRAM SO-DIMMs (system Max. 64 GB)	2 x 260-pin 2666/2400 MHz dual-channel DDR4 SDRAM SO-DIMMs (system Max. 64 GB)	2 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	2 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	2 x SO-DIMM DDR4 2400MHz up to 64GB
Display Interface	Triple independent display 4 x DP (KINO-V1000) 3 x DP (KINO-R1000)	Dual independent display 2 x HDMI 1 x iDP interface	Dual independent display 1 x DP++ 1 x HDMI 1 x iDP interface	Triple independent display 1 x VGA 1 x HDMI 1 x 18/24-bit dual channel LVDS	Triple independent display 2 x DP++ 1 x eDP	Triple independent display 1 x HDMI 2.0 1 x HDMI 1.4 1 x DP++
Ethernet	Dual LAN: RTL8111GN	Dual LAN: RTL8111H	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I219LM with Intel® AMT 11.0 support	Dual LAN: Intel® I210-IT/211AT PCIe controller	Dual LAN: RTL8111	Dual LAN: RTL8111GN
I/O Interface	8 x RS-232 (2 support AFC, 2 support Cctalk, TTL) 4 x USB 2.0 2 x USB 3.2 Gen1	1 x KB/MS 1 x RS-422/485 3 x RS-232, 4 x USB 3.2 Gen 1 4 x USB 2.0	1 x KB/MS 1 x RS-232/422/485 2 x RS-232, 4 x USB 3.2 Gen 1 4 x USB 2.0 2 x SATA 6G/s	1 x PS2 KB/MS 2 x RS-232/422/485 2 x USB 2.0 4 x RS-232 4 x USB 3.2 Gen1	1 x PS/2 KB/MS 2 x RS-232/422/485 2 x USB 2.0 4 x RS-232 4 x USB 3.2 Gen 1	2 x RS-232/422/485 4 x RS-232 (2 support cctalk, TTL) 4 x USB 3.2 Gen 1 5 x USB 2.0
Storage Interface	2 x SATA 6G/s 1 x M.2 2242/2280 M key (PCIe x2/SATA)	2 x SATA 6G/s	1 x M.2 (B Key) (2242) (SATA signal)	2 x SATA 6Gb/s with 12/5V SATA power connector 1 x 8 GB eMMC (optional) 1 x M.2 (B Key) (2242) (SATA port1 + USB 2.0 signal) 1 x Micro SD slot (Optional)	2 x SATA 6Gb/s with 12/5V SATA power connector 1 x M.2 (B Key) (2242) (SATA port1 + USB 2.0 signal) 1 x Micro SD slot (Optional)	2 x SATA 6Gb/s with 5V/12V SATA power connector 1 x MicroSD slot 1 x M.2 (B key) (SATA signal)
Audio	Realtek ALC662 HD codec				Realtek ALC269 HD Audio codec	Realtek ALC662 HD Audio codec
Digital I/O	8-bit programmable digital I/O					
Power Consumption	TBD	12V@11.32A (Intel® Core™ i7-8700 up to 4.60 GHz CPU with two 8GB 2666MHz DDR4 memory)	12V@12.16A (3.4GHz Intel® Core™ i7-6700 with two 8GB 2133MHz 16GB DDR4 memory)	8-bit programmable digital I/O 12V@3.62A (Intel® Pentium® N4200 CPU with two 8GB 1600MHz DDR3L memory)	12V@2.58A (Intel® Pentium® N4200 CPU with two 8GB 1600MHz DDR3L memory)	12V@5.54A (AMD RX-421BD 2.1GHz CPU with 2400 MHz 16GB DDR4 memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset					
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing			Temperature Range: KINO-DAL: -20°C ~ 70°C (-4°F ~ 158°F) KINO-DALW2: -40°C ~ 85°C (-40°F ~ 185°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -20°C ~ 70°C (-4°F ~ 158°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing
Expansion Slot	1 x PCIe x16 slot 1 x M.2 2242/2280 M key (PCIe x2/SATA)	1 x PCIe x16 1 x M.2 M key (2280, Gen2 PCIe x2 only) 1 x M.2 A Key (2230, PCIe x1 & USB 2.0)	1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot	1 x PCIe x1 slot 1 x Full/Half-size PCIe Mini card slot (w/ SIM holder)	1 x PCIe x1 slot 1 x Full/Half-size PCIe Mini card slot (w/ SIM holder)	1 x PCIe x8 slot 1 x Full-size PCIe Mini card slot 1 x MicroSD slot
CPU Cooler	Cooler	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	Heatsink	Heatsink	Cooler

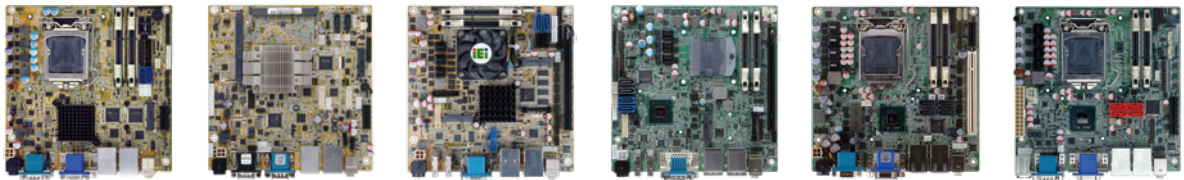
# Mini-ITX



Model	tKINO-ULT3	KINO-DCM236	KINO-DQM170	KINO-AQ170	tKINO-BW	KINO-DBT
CPU Socket	On Board	On Board	On board	LGA1151	On board	On board
CPU Type	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® Xeon® E3, Core™ i3, Celeron® process	6th generation Intel® Core™ i7/i5/i3 and Celeron® processor	6th/7th generation Intel® Core™ i7/i5/i3, Pentium® and Celeron® processor	Intel® Pentium®/Celeron® on board SoC	Intel® Atom™/Celeron® on board SoC
Chipset	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® CM236	Intel® QM170	Intel® Q170	Intel® Pentium®/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC
Memory	2 x SO-DIMM DDR4 2133MHz, system maximum up to 32GB	2 x SO-DIMM DDR4 2133MHz up to 32GB with ECC support	Two 260-pin 2133 MHz dual-channel DDR4 SDRAM SO-DIMMs (system Max. 64 GB)	Two 260-pin 2133 MHz dual-channel DDR4 SDRAM SO-DIMMs (system Max. 64 GB)	Two 204-pin 1600/1333 MHz dual-channel DDR3L SDRAM SO-DIMMs (support up to 8 GB)	Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826) One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 4 GB (N2807, E3825, E3815)
Display Interface	Triple independent display 1 x HDMI/DP 1 x HDMI 1 x LVDS/eDP	Triple independent display 1 x HDMI 2.0 2 x HDMI 1.4 1 x LVDS	Triple independent display supported 1 x HDMI 2.0 2 x HDMI 1.4 1 x LVDS	Triple independent display supported 1 x HDMI 2.0 1 x HDMI/DP 1 x VGA 1 x iDP interface	Triple independent display supported 1 x HDMI/DP 1 x VGA 1 x 18/24-bit dual-channel LVDS	Dual independent display supported 1 x VGA 1 x DVI-D
Ethernet	LAN1: Intel® I219LM LAN2: Intel® I211AT	LAN1: Intel® I219LM LAN2: Intel® I211	LAN1: Intel® I219-LM with Intel® AMT 11.0 support LAN2: Intel® I211 PCIe controller	LAN1: Intel® I211 PCIe controller LAN2: Intel® I219LM with intel AMT 11.0 support	Dual LAN: Realtek RTL8111G PCIe controller	Dual LAN: Realtek RTL8111G PCIe controller
I/O Interface	2 x RS-232/422/485 4 x RS-232 4 x USB 2.0 4 x USB 3.2 Gen 1	1 x KB/MS 2 x RS-232/422/485 4 x RS-232 4 x USB 2.0 4 x USB 3.2 Gen 1	1 x KB/MS 2 x RS-232/422/485 4 x RS-232 4 x USB 2.0 4 x USB 3.2 Gen 1	1 x KB/MS 2 x RS-232/422/485 4 x RS-232 4 x USB 3.2 Gen 1 6 x USB 2.0	1 x KB/MS 2 x RS-232/422/485 2 x USB 3.2 Gen 1 4 x RS-232 4 x USB 2.0	1 x KB/MS 1 x RS-422/485 2 x USB 3.2 Gen 1 4 x USB 2.0 5 x RS-232
Storage Interface	2 x SATA 6Gb/s with 5V SATA power connector 1 x eMMC5.0 (up to 32G, optional)	4 x SATA6Gb/s 1 x mSATA	4 x SATA 6Gb/s (RAID 0/1/5/10 supported)	4 x SATA 6Gb/s (RAID 0/1/5/10 supported)	2 x SATA 6Gb/s 1 x mSATA 1 x Micro SD slot	2 x SATA 3Gb/s 1 x Micro SD slot (E38xx sku only)
Audio	Realtek ALC662 HD Audio Codec					
Digital I/O	8-bit programmable digital I/O			8-bit digital I/O		
Power Consumption	12V@4.68A (Intel® Core™ i7-6600U up to 3.4GHz CPU with 16GB (8GB x 2) DDR4-2133 memory running in 3.2GHz)	12V@6.93A (Intel Xeon E3-1505M V5 2.8GHz CPU with 32 GB (two 16 GB) 2133 MHz DDR4 memory)	12V@5.08A (Intel® Core™ i7-6820EQ, 3.5GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)	3.3V@1.62A, 5V@3.54A, 12V@8.17A, 5VSB@3.6A (Intel® Core™ i7 6700K 4.0 GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)	12V@1.61A (Intel® Celeron® N3710 CPU with two 4 GB 1600 MHz DDR3L memory)	12V@1.64A (Intel® Celeron® J1900 CPU with 4 GB 1333 MHz DDR3L memory)
Watchdog Timer	Software programmable supports 1~255 sec. system reset					
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing					
Expansion Slot	1 x PCIe x4 slot 1 x Full-size PCIe Mini card slot (support mSATA, colay with SATA2) 1 x Full-size PCIe Mini card slot (with SIM card slot)	1 x PCIe x16 slot 1 x Full-size PCIe Mini card slot (support mSATA) 1 x Half-size PCIe Mini card slot 1 x M.2 2230 (A key)	1 x PCIe x16 slot 1 x Full-size PCIe Mini card slot (support mSATA) 1 x Half-size PCIe Mini card slot 1 x M.2 2230 (A key)	1 x PCIe x8 slot 1 x Full-size PCIe Mini card Slot (support mSATA)	1 x PCIe x1 slot 1 x PCIe Mini card slot	1 x Full-size PCIe Mini card slot (support mSATA) 1 x PCIe x4 slot (with PCIe x1 signal)
CPU Cooler	Heatsink	Heatsink	Heatsink	CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	Heatsink	Heatsink



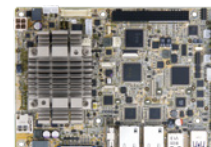
# Mini-ITX



Model	KINO-DH810	eKINO-BT	KINO-DQM871-i1	KINO-QM770	KINO-DH610	KINO-AH612
CPU Socket	LGA1150	On board	On Board	Socket G2	Socket H2	Socket H2
CPU Type	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Atom™/Celeron® on-board SoC	Intel® Core™ i7/i5/i3 Mobile processor	Intel® Mobile processor	Intel® Core™ i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor
Chipset	Intel® H81	Intel® Atom™/Celeron® on-board SoC	Intel® QM87	Intel® QM77	Intel® H61	Intel® H61
Memory	Two 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 16 GB)	Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826) One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 4 GB (N2807, E3825, E3815)	2 x 204-pin, Max. 16 GB, 1333/1600 MHz dual-channel DDR3 SO-DIMMs	2 x 204-pin, Max. 16 GB, 1066/1333/1600 MHz dual-channel DDR3 SO-DIMMs	2 x 204-pin 1066/1333 MHz dual-channel DDR3 SO-DIMMs (system max. 16 GB)	2 x 204-pin 1066/1333 MHz dual-channel DDR3 SO-DIMMs (system max. 16 GB)
Display Interface	Dual display supported 1 x VGA 1 x DVI-D 1 x iDP interface	Dual display supported 1 x VGA 2 x 18/24-bit dual-channel LVDS	Triple display supported 2 x HDMI 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Triple display supported 2 x HDMI 1 x DVI-I 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x HDMI 1 x DVI-D	Dual display supported 1 x VGA 1 x DVI-D
Ethernet	Dual LAN: Intel® I211-AT PCIe controller	Dual LAN: Realtek RTL8111E PCIe controller	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller	LAN1: Intel® 82579 PHY with Intel® AMT 8.0 support LAN2: Intel® 82583V PCIe controller	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
iRIS Remote Management Module	N/A		1 x iRIS-1010 slot	N/A		
I/O Interface	1 x PS/2 for KB/MS 1 x RS-422/485 2 x USB 3.2 Gen 1 5 x RS-232 6 x USB 2.0	1 x PS/2 for KB/MS 1 x RS-422/485 2 x USB 3.2 Gen 1 4 x RS-232 4 x USB 2.0	1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 4 x USB 3.2 Gen 1 5 x RS-232 10 x USB 2.0	1 x KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 2 x RS-232 4 x USB 2.0 4 x USB 3.2 Gen 1	1 x KB/MS 1 x RS-232 1 x RS-422/485 1 x TPM (2x10 pin) 10 x USB 2.0	1 x PS/2 for KB/MS 1 x RS-422/485 1 x TPM (2x10 pin) 5 x RS-232 8 x USB 2.0
Storage Interface	2 x SATA 6Gb/s	2 x SATA 3Gb/s	2 x SATA 6Gb/s 2 x SATA 3Gb/s 1 x mSATA	2 x SATA 6Gb/s 2 x SATA 3Gb/s	4 x SATA 3Gb/s	4 x SATA 3Gb/s
Audio	Realtek ALC662 HD Audio codec			Realtek ALC892 HD Audio codec	Realtek ALC662 HD Audio codec	
Digital I/O	8-bit programmable digital I/O					
Power Consumption	12V@6.03A (Intel® Core™ i7-4770K 3.90 GHz CPU with two 1333 MHz 4 GB DDR3 memory)	12V@1.55A (Intel® Celeron® J1900 CPU with two 8 GB 1333 MHz DDR3L memory)	12V@5.03A (2.0GHz Intel® Core™ i7 processor with two 1333 MHz 4 GB DDR3 memory)	12V@6.08A (2.3GHz Intel® Core™ i7-3610QE with two 1333 MHz 4 GB DDR3 memory running 3DMark06 burn in)	12V@5.07A (2.2GHz Intel® G620T with two 2GB DDR3 1066 MHz running 3DMark06 burn in) 12V@8.85A (2.8GHz Intel® Core™ i7-2600S with two 1066 MHz 2 GB DDR3 running 3DMark06 burn in)	5V@3.9A, 12V@0.36A, Vcore_12V@0.28A, 3.3V@1.24A, 5VSB@0.18A (3.4GHz Intel® Core™ i7-2600 with two 1333 MHz 2 GB DDR3)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset					
Operation Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing			
Expansion Slots	1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot	1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot	1 x PCIe x16 slot 1 x Full-size PCIe Mini slot (support mSATA)	1 x PCIe x16 slot 1 x PCIe Mini card slot (support mSATA)	1 x PCI slot 1 x PCIe x1 slot	1 x PCIe x4 slot
CPU Cooler	CF-115XA-R10 CF-115XE-R10	Heatsink	XCF-479B-RS CF-989B-RS-R11	CF-989A-RS-R12	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10	CF-115XA-R10 CF-115XC-R10 CF-115XD-R10 CF-115XE-R10

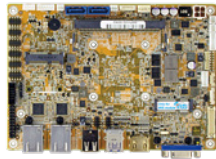


# EPIC NANO

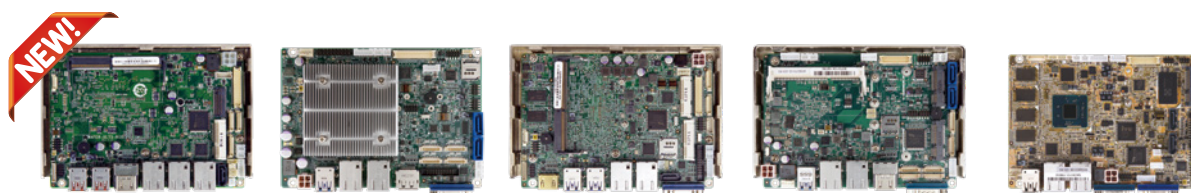
Model	NANO-ULT5	NANO-AL	NANO-ULT3	NANO-BT-i1/BTW2
CPU Socket	On Board	On board	On board	On board
CPU Type	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® Atom™, Celeron® SoC
Chipset	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® Atom™/Celeron® on-board SoC
Memory	2 x 260-pin 2400/2133 MHz Dual-channel DDR3L/DDR4, SO-DIMM (system max. 32 GB)	1 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	2 x 260-pin 2133/1867 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)	1 x 204-pin 1333/1066 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)
Display Interface	Triple independent displays 1 x HDMI 1 x DP 1 x Internal LVDS	Triple independent display 2 x HDMI 1 x 18/24-bit dual-channel LVDS 1 x iDP	Triple independent display 2 x HDMI 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x HDMI 1 x 18/24-bit dual-channel LVDS
Ethernet	1 x PCIe GbE LAN Intel® i211 controller 1 x PCIe GbE LAN Intel® i219 controller	Dual LAN: Intel® I210-IT/I211-AT PCIe controller	LAN1: Intel® I219-LM PHY with Intel® AMT 11.0 supported LAN2: Intel® I211-AT PCIe GbE Controller	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller
iRIS Remote Management Module	N/A			1 x iRIS-1010 slot
I/O Interface	1 x TPM (2x10 pin SPI interface) 1 x RS-422/485 (Support Auto Flow Control over RS-485) 2 x RS-232 2 x SATA 6G/s with 5V SATA power connector 2 x USB 2.0 4 x USB 3.2 Gen 2	1 x PS/2 KB/MS 2 x RS-232/422/485 2 x USB 2.0 4 x RS-232 4 x USB 3.2 Gen 1	1 x PS/2 KB/MS 1 x RS-232/422/485 2 x RS-232 2 x USB 2.0 4 x USB 3.2 Gen 1	1 x PS/2 KB/MS 1 x RS-422/485 1 x USB 3.2 Gen 1 3 x RS-232 3 x USB 2.0
Storage Interface	2 x SATA 6Gb/s with 5V SATA power connector 1 x M.2 (M Key with SATA/PCIe interface) (Celeron with M.2 M Key PCIe only)	2 x SATA 6Gb/s with 5V SATA power connector 1 x M.2 (B Key) (SATA only)	2 x SATA 6Gb/s with 5V SATA power connector 1 x 8 GB eMMC (optional)	2 x SATA 3Gb/s with 5V SATA power connector
Audio	Realtek ALC662 2 x Audio jacks 1 x Analog audio	Realtek ALC662 HD Audio codec		
Digital I/O	8-bit programmable digital I/O			
Power Consumption	TBD	12V@2.13 A (Intel® Pentium® N4200 CPU with one 8GB 1600MHz DDR3L memory)	12V@2.48A (Intel® Core™ i3-6100U CPU)	12V@1.52A (Intel® Atom™ Processor J1900 CPU with one 8 GB 1333 MHz DDR3L memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset			
Operating Environment	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: NANO-AL: -20°C ~ 70°C (-4°F~158°F) NANO-ALW2: -40°C ~ 85°C (-40°F~185°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: NANO-BT-i1: -20°C ~ 60°C (-4°F~140°F) NANO-BTW2: -40°C ~ 85°C (-40°F~185°F) Relative Humidity: 5% ~ 95% non-condensing
Expansion Slots	1 x Full-size PCIe Mini slot 1 x M.2 slot with 2230 A key 1 x M.2 slot with 2280 M key 1 x SIM card	1 x Full/Half-size PCIe Mini slot (w/ Micro SIM holder)	1 x Full-size PCIe Mini card slot (with SIM holder & mSATA support) 1 x Half-size PCIe Mini card slot	1 x Full-size PCIe Mini card slot with mSATA support 1 x PCI-104 slot
CPU Cooler	Heat Spreader	Heatsink	Heat Spreader	Heatsink

# EPIC NANO



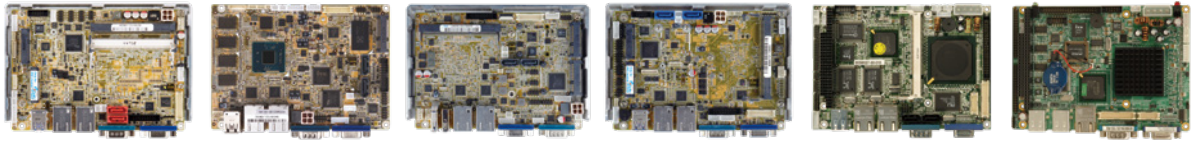
Model	NANO-SE/KBN-i1	NANO-QM871-i1	NANO-QM770	NANO-LX-R12
CPU Socket	On board	On board	Socket G2	On board
CPU Type	AMD® Embedded G-Series SoC	Intel® Core™ i7/i5/i3, Celeron® Mobile processor	Intel® Core™ i7/i5/i3, Celeron® Mobile processor	AMD Geode™ LX800
Chipset	AMD® Embedded G-Series SoC	Intel® QM87	Intel® QM77	AMD Geode™ LX800 + AMD CS5536
Memory	1 x 204-pin 1600/1333 MHz single-channel DDR3 & DDR3L SO-DIMM (system max. 8 GB)	1 x 204-pin 1600/1333 MHz dual-channel DDR3/DDR3L SO-DIMM (system max. 8 GB)	1 x 204-pin 1600/1333 MHz single-channel DDR3 SO-DIMM (system max. 8 GB)	1 x 200-pin 400/333 MHz DDR SO-DIMM (system max. 1 GB)
Display Interface	Dual display supported 1 x VGA 1 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 2 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual display supported 2 x DVI-I 2 x HDMI 1 x 24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit TTL (LVDS to TTL)
Ethernet	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I217-LM PHY with Intel® AMT 9.0 supported LAN2: Intel® I211-AT PCIe GbE controller	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 8.0 supported	10/100Mbps Realtek RTL8100C
iRIS Remote Management Module	1 x iRIS-1010 slot		N/A	
I/O Interface	1 x PS/2 KB/MS 1 x RS-422/485 2 x USB 3.2 Gen 1 5 x RS-232 6 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 2 x RS-232 2 x USB 3.2 Gen 1 4 x USB 2.0	1 x I <sup>2</sup> C 1 x Infrared 1 x PS/2 KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM connector 2 x RS-232 2 x USB 2.0 4 x USB 3.2 Gen 1	1 x Infrared interface 1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 4 x USB 2.0 6 x RS-232
Storage Interface	2 x SATA 6Gb/s with 5V SATA power connector	2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1)	2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1)	2 x SATA 1.5Gb/s (RAID 0, 1) 1 x IDE 1 x CF Type II
Audio	Realtek ALC892 HD Audio codec	Realtek ALC662 HD Audio codec		Realtek ALC203 with AC'97 codec
Digital I/O	8-bit programmable digital I/O			
Power Consumption	12V@1.02A (AMD GX-415GA 1.5GHz CPU with 1600 MHz 8 GB DDR3 memory)	12V@3.78A (Intel® 4th Gen. 2.0GHz CPU with one 1333MHz DDR3 4 GB memory)	12V@4.89A (Intel® 1.8GHz CPU with 1333 MHz DDR3 4 GB memory)	12V@0.92A (AMD LX800, 256 MB 400 MHz DDR)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset			
Operation Environment	Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing		Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing
Expansion Slots	1 x Full-size PCIe Mini card slot with mSATA support	1 x Full-size PCIe Mini card slot	1 x PCIe Mini card slot with mSATA support	1 x PC/104-Plus
CPU Cooler	GX-415GA (with heatsink) GX-210HA (with cooler)	XCF-479B-RS / CF-989B-RS-R11	CF-989A-RS-R12 / CF-989B-RS-R11	Heatsink

# » 3.5" WAFER



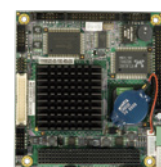
Model	WAFER-ULT5	WAFER-AL	WAFER-ULT4/ULT3	WAFER-BW	WAFER-BTW2
CPU Socket	On Board	On board	On board	On board	On board
CPU Type	Intel® Mobile ULT processor	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Mobile ULT processor	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC
Chipset	Intel® Mobile ULT processor	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Mobile ULT processor	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC
Memory	1 x 260-pin 2400MHz DDR4 SDRAM SO-DIMM (channel 1)	1 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	1 x 260-pin 2133MHz DDR4 SDRAM SO-DIMM (channel 1) On-board DDR4 memory (optional 4/8GB support)	1 x 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8 GB)	4 GB solder-down 1066/1333 MHz DDR3L memory (for E3845) 2 GB solder-down 1066/1333 MHz DDR3L memory (for E3825)
Display Interface	Triple independent display 2 x HDMI 1 x 18/24-bit dual-channel LVDS	Triple independent display 1 x VGA 1 x DP++ 1 x 18/24-bit dual-channel LVDS 1 x iDP	Triple independent displays 1 x VGA 1 x HDMI 1 x 18/24-bit dual-channel LVDS 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP	Triple independent display 2 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual independent display 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface
Ethernet	LAN1: Intel® I211AT LAN2: Intel® I211AT LAN3: Intel® I219LM	LAN1: Realtek RTL8111 Controller LAN2: Realtek RTL8111 Controller	1 x Intel® I219LM 1 x Intel® I211AT	LAN1: Realtek RTL8111GN controller LAN2: Realtek RTL8111GN controller	LAN1: Intel® I210-IT PCIe controller LAN2: Intel® I210-IT PCIe controller
I/O Interface	1 x RS-232 1 x RS-232/422/485 (Support Auto Flow Control over RS-485) 2 x USB 2.0 4 x USB 3.2 Gen 2	2 x RS-232 2 x RS-232/422/485 2 x USB 3.2 Gen 1 4 x USB 2.0	2 x RS-232/422/485 4 x USB 3.2 Gen 1 2 x USB 2.0	1 x PS/2 KB/MS 2 x RS-232/422/485 2 x USB 3.2 Gen 1 4 x RS-232 4 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 1 x USB 3.2 Gen 1 3 x RS-232 5 x USB 2.0
Storage Interface	1 x SATA 6G/s with 5V SATA power connector	2 x SATA 6Gb/s with 5V SATA power connector	1 x SATA 6Gb/s with 5V SATA power connector	2 x SATA 6Gb/s with 5V SATA power connector (no RAID) 1 x eMMC4.51 (optional)	2 x SATA 3Gb/s with 5V SATA power connector (no RAID) 1 x 4 GB on-board SSD (optional) 1 x microSD 1 x mSATA
Audio	N/A	Realtek ALC662 HD Audio codec	N/A	Realtek ALC662 HD Audio codec	
Digital I/O	8-bit programmable digital I/O				
Power Consumption	12V@3.38A (Intel® Core™ i7--8665UE up to 4.4 GHz With 16GB 2666MHz DDR4 Memory)	12V@2.57A (Intel® Pentium® N4200 up to 2.5GHz with 8GB DDR3L memory)	12V@4.27A (Intel® Core™ i7-6600U up to 3.4GHz CPU with 16GB (16GB x1) DDR4-2133 memory running in 3.0GHz)	12V@1.52A (Intel® Pentium® processor N3710 with 8 GB 1600MHz DDR3L memory)	12V@1.32A (Intel® Atom™ processor E3845 with on-board 2 GB 1333 MHz DDR3L memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset				
Operating Environment	Temperature Range: -20°C ~ 60°C (-4°F~140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 70°C (-4°F~158°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F~140°F) Relative Humidity: 5% ~ 95%, non-condensing		
Expansion Slot	1 x Full-size PCIe Mini slot (w/ SATA signal, support mSATA) 1 x M.2 slot with A Key 2230	2 x Full/Half-size PCIe Mini card slot (one supports mSATA, another one with SIM holder)	1 x Full-size PCIe Mini slot (w/ SATA signal, support mSATA) 1 x Full-size PCIe Mini slot (w/ SIM card slot support)	2 x Full/Half-size PCIe Mini card slot (one with SIM holder)	2 x Full-size PCIe Mini card slot (one with SIM holder)
Recommended CPU Cooler	Heat Spreader	Heatsink	Heat Spreader	Heat Spreader	Heatsink

# 3.5" WAFER



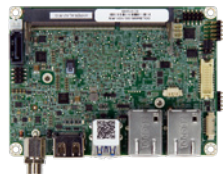
Model	WAFER-ULT2/ ULT-i1	WAFER-BT- E38001W2	WAFER-BT	WAFER-KBN-i1	WAFER-LX-R12	WAFER-LX2-R12
CPU Socket	On board	On Board	On board	On board	On board	On board
CPU Type	Intel® Mobile ULT processor	Intel® Atom™ SoC	Intel® Atom™/Celeron® SoC	AMD® Embedded G-Series SoC	AMD Geode™ LX800	AMD Geode™ LX800
Chipset	Intel® Lynx Point SoC	Intel® Atom™ SoC	Intel® Atom™/Celeron® on-board SoC	AMD® Embedded G-Series SoC	AMD Geode™ LX800 + AMD CS5536	AMD Geode™ LX800 + AMD CS5536
Memory	2 x 204-pin 1600/1333 MHz dual-channel DDR3L SO-DIMMs (system max. 16 GB)	On-board DDR3L memory 2GB for E3825 4GB for E3845	1 x 204-pin 1066/1333 MHz dual-channel DDR3L SO-DIMMs (system max. 8 GB)	1 x 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SO-DIMM (system max. 8 GB)	1 x 200-pin 333/400 MHz. 1 GB (max.) DDR SO-DIMM	1 x 200-pin 400 MHz. 1 GB (max.) DDR SO-DIMM
Display Interface	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit TTL	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit TTL
Ethernet	LAN1: Intel® I218LM PHY with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe GbE controller	LAN1: Intel® I210-IT PCIe controller LAN2: Intel® I211-IT PCIe controller	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller	Dual LAN: 10/100Mbps RTL8100C Ethernet Controller	LAN1: 10/100Mbps RTL8100C Ethernet Controller
iRIS Remote Management Module	1 x iRIS-1010 slot	N/A	N/A	1 x iRIS-1010 slot	N/A	N/A
I/O Interface	1 x PS/2 KB/MS 1 x RS-422/485 2 x USB 2.0 2 x USB 3.2 Gen 1 3 x RS-232	1 x PS/2 KB/MS 1 x RS-422/485 1 x RS-232 4 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 1 x USB 3.2 Gen 1 3 x RS-232 5 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 2 x USB 3.2 Gen 1 3 x RS-232 4 x USB 2.0	1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 2 x RS-232 4 x USB 2.0	1 x RS-232/422/485 4 x USB 2.0 7 x RS-232
Storage Interface	2 x SATA 6Gb/s with 5V power connector	2 x SATA 3Gb/s with 5V SATA power connector (no RAID)	2 x SATA 3Gb/s with 5V SATA power connector (no RAID)	2 x SATA 6Gb/s with 5V SATA power connector	2 x SATA 1.5Gb/s RAID 1 x IDE 1 x CF Type II	1 x IDE 1 x CF Type II
Audio	Realtek ALC662 HD Audio codec				Realtek ALC203 with AC'97 codec	
Digital I/O	8-bit programmable digital I/O					
Power Consumption	12V@2.72A (Intel® Core™ i5-4300U CPU with two 8 GB 1600 MHz DDR3 memory)	12V@1.332A (Intel® Atom E3840 Processor 1.91GHz with one 2 GB 1333 MHz DDR3 memory)	12V@1.45A (Intel® Celeron® Processor J1900 CPU with one 8 GB 1333 MHz DDR3L memory)	12V@2.12A (AMD GX-415GA 1.5GHz CPU with 1333 MHz 4 GB DDR3 memory)	5V@1.53A (AMD Geode™ LX 800 1 GB 400 MHz DDR)	5V@1.33A (AMD Geode™ LX800 512MB 333 MHz DDR)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset					
Operating Environment	Temperature Range: -10°C ~ 60°C (14°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -40°C ~ 85°C Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: 0°C ~ 60°C (32°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: 0°C ~ 60°C (32°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	
Expansion Slot	1 x Full-size PCIe Mini card slot (supports mSATA)	2 x Full-size PCIe Mini card slot (one supports mSATA)	1 x Full-size PCIe Mini card slot (supports mSATA)	1 x Full-size PCIe Mini card slot (supports mSATA)	1 x PC/104	1 x PC/104
Recommended CPU Cooler	Heat Spreader	Heatsink	N/A	GX-415GA (with heatsink) GX-210HA (with cooler)	Heatsink	Heatsink

# PC/104



Model	PM-BT	PM-LX	PM-LX2
CPU Socket	On board	On board	On board
CPU Type	Intel® Atom™/Celeron® SoC	AMD Geode™ LX 800 500 MHz	AMD Geode™ LX 800 500 MHz
Chipset	Intel® Atom™/Celeron® SoC	Geode™ LX800 + CS5536	Geode™ LX800 + CS5536
Memory	1 x 204-pin 1066/1333 MHz DDR3L SO-DIMM (system max. 8 GB)	1 x 200-pin 400 MHz 1 GB (max.) DDR SDRAM SO-DIMM	1 x 200-pin 400 MHz 1 GB (max.) DDR SDRAM SO-DIMM
Display Interface	Dual display supported 1 x VGA 1 x 18/24-bit single-channel LVDS	Dual display supported 1 x VGA 1 x 24-bit TTL	Dual display supported 1 x VGA 1 x 24-bit TTL
Ethernet	GbE by Intel® I210 Ethernet PHY	10/100Mbps LAN by Realtek RTL8100C	10/100Mbps LAN by Realtek RTL8100C
iRIS Remote Management Module	N/A		
I/O Interface	2 x RS-232/422/485 (2x5, P=2.0) 3 x USB 2.0 (1x4 pin, P=1.25)	1 x KB/MS by pin header 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 2.0	1 x KB/MS by pin header 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 2.0
Storage Interface	1 x SATA 3Gb/s with 5V SATA power connector On-board SSD (optional)	1 x IDE 1 x CF Type II	1 x Slim FDD 1 x IDE 1 x CF Type II
Audio	N/A		
Digital I/O	1 x 8-bit DIO	N/A	
Power Consumption	5V@1.70A (Intel® Celeron® J1900 CPU with 8GB memory)	5V@1.13A (AMD Geode™ LX 800 with 1 GB DDR 400 MHz)	5V@1.09A (AMD Geode™ LX 800 with 512MB DDR 400 MHz)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset		
Operating Environment	-20°C ~ 60°C (for J1900/N2930/N2807) -40°C ~ 85°C (for E38xx)	Temperature Range: 0°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -40°C ~ 70°C (W) Relative Humidity: 5% ~ 95%, non-condensing
Expansion Slot	1 x Full-size PCIe Mini slot (support mSATA) 1 x PC/104-Plus (ISA+PCI)	1 x PCI-104	1 x PC-104
CPU Cooler	Heatsink	Heatsink	Heatsink

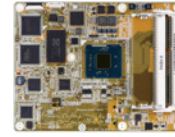
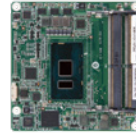
# Pico-ITX



Model	HYPER-RK39	HYPER-AL	HYPER-BW	HYPER-BT
CPU Socket	On board	On board	On board	On board
CPU Type	Rockchip RK3399 (Dual-core Cortex-A72 up to 1.8GHz + Quad-core Cortex-A53 up to 1.5GHz)	Intel® Celeron® SoC	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC
Chipset	SoC	Intel® Celeron® SoC	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC
Memory	On board 2GB LPDDR3-1866	1 x 204-pin 1866/1600MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8GB)	1 x 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8 GB)	1 x 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8 GB)
Display Interface	Dual independent display 1 x HDMI 1 x eDP	Dual independent display 1 x HDMI 1 x LVDS	Dual independent display 2 x Mini HDMI	Dual independent display 1 x VGA 1 x iDP interface
Ethernet	LAN: Realtek RTL8211E	LAN1: Realtek RTL8111H controller LAN2: Realtek RTL8111H controller	LAN: Realtek RTL8111GN controller	LAN: Intel® I211-AT PCIe GbE controller
iRIS Remote Management Module	N/A			
I/O Interface	1 x RS-232/422/485 1 x USB 3.2 Gen 1 (5Gb/s) Type A 1 x USB 3.2 Gen 1 (5Gb/s) Type C 1 x USB 2.0 Type A 1 x I <sup>2</sup> C 1 x MIPI CSI interfaces for Camera 8 bit (4 in / 4 ot)	1 x RS-232 2 x USB 2.0 2 x USB 3.2 Gen 1	1 x RS-232 1 x USB 3.2 Gen 1 3 x USB 2.0	1 x RS-232 1 x USB 3.2 Gen 1 3 x USB 2.0
Storage Interface	1 x Micro SD slot	1 x SATA 6Gb/s with 5V SATA power connector (no RAID)	1 x SATA 6Gb/s with 5V SATA power connector (no RAID)	1 x SATA 3Gb/s with 5V SATA power connector (no RAID)
Audio	1 x 2 pin for speaker (1.5W 8Ω) 1 x 10 pin (Line in / Line out)	10 pin header on board support 7.1 channel HD Audio by AC-KIT-892HD-R10		Realtek ALC662 HD Audio codec
Power Consumption	12V@1.2A	12V@2.36A (Intel® Celeron® processor N3350 with 8 GB 1600 MHz DDR3L memory)	12V@1.52A (Intel® Pentium® processor N3710 with 8 GB 1600 MHz DDR3L memory)	12V@1.35A (Intel® Celeron® processor J1900 with one 8 GB 1333 MHz DDR3L memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset			
Operating Environment	Temperature Range: -10°C ~ 50°C Relative Humidity: 10% ~ 90%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		
Expansion Slot	1 x Full-size PCIe Mini (reserved for WWAN)	1 x M.2 A key 2230 1 x M.2 B key 2242	1 x M.2 (B key)	N/A
CPU Cooler	Heatsink	Heat Spreader	Heatsink	Heat Spreader

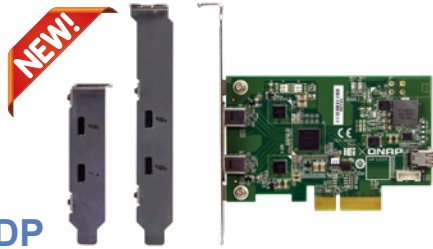


# Computer on Module



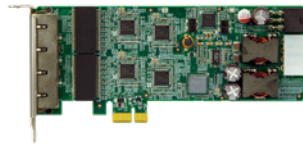
Computer on Module	COM Express Type 10	COM Express Type 7	COM Express Type 6	COM Express Type 6	Qseven 2.0
COM Express Size	Mini: 84 mm x 55 mm	Basic: 125 mm x 95 mm	Compact: 95 mm x 95 mm	Basic: 125 mm x 95 mm	70 mm x 70 mm
Model	ICE-BT-T10W2	ICE-BDE-T7	ICE-ULT3	ICE-BT-T6	iQ7-BT-E38001 iQ7-BT-E38001W2
CPU Socket	On board	On Board	On board	On board	On board
CPU Type	Intel® Atom™/Celeron® on-board SoC	Intel® Xeon® D Processor On-Board SoC	Intel® Skylake ULT on-board SoC	Intel® Atom™/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC
Chipset	Intel® Atom™/Celeron® on-board SoC	Intel® Xeon® D and Pentium® D SoC	Intel® Skylake ULT	Intel® Atom™/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC
Memory	2 GB soldered down 1066/1333 MHz DDR3L memory (up to 8 GB)	Two 240-pin 2133/1867 MHz dual-channel DDR4 SDRAM Unbuffered DIMM supported (system max. 32GB) Support ECC	Two 260-pin 2133/1867 MHz dual-channel DDR4 SDRAM Unbuffered DIMM supported (system max. 32GB)	Two 204-pin 1066/1333 MHz dual-channel DDR3L SO-DIMM supported (system max. 8 GB)	2 GB soldered down 1066/1333 MHz DDR3L memory (up to 4 GB)
Display Interface	Dual display supported 1 x VGA 1 x DDI 1 x eDP	N/A	Tripl display supported 2 x DDI: DisplayPort/HDMI/DVI 1 x DDI: Embedded DP (Option with 1 x Dual Channel LVDS 18/24 bit via CH7511B)	Dual display supported 1 x VGA 1 x DDI 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x DDI 1 x 18/24-bit dual-channel LVDS
Ethernet	LAN1: Intel® I210 PCIe controller	LAN1: Intel® I210 2 x 10G KR Interface 10G sideband Signals	LAN1: Intel® I219LM	LAN1: Intel® I210 PCIe controller	LAN1: Intel® I210 PCIe controller
I/O Interface	1 x I <sup>2</sup> C 1 x SMBus 1 x LPC 1 x USB 3.2 Gen 1 2 x Serial port (TX & RX) 4 x USB 2.0	2 x RS-232 (2-Wire) to base board 4 x USB 3.0 to base board (With 4 x USB 2.0)	2 x RS-232 (2-Wire) to base board 4 x USB 2.0 to base board 4 x USB 3.2 Gen 1 to base board (with 4 x USB 2.0)	1 x I <sup>2</sup> C 1 x LPC 1 x SMBus 2 x Serial port (TX & RX) 4 x USB 3.2 Gen 1 7 x USB 2.0	1 x LPC 1 x SDIO 1 x SMBus 1 x USB 3.2 Gen 1 3 x I <sup>2</sup> C 6 x USB 2.0
Storage Interface	2 x SATA 3Gb/s Optional soldered down SSD up to 64 GB (SATA port 1)	2 x SATA 6Gb/s signal to baseboard	2 x SATA 6Gb/s signal to base board eMMC 5.0 (optional)	2 x SATA 3Gb/s Optional soldered down SSD up to 64 GB (SATA port 1)	2 x SATA 3Gb/s Optional soldered down SSD up to 64 GB (SATA port 1)
Audio	High-definition Audio interface	N/A	High-definition Audio interface		
Power Consumption	12V@0.43A, Vcore_12V@0.9 A (Intel® Atom™ E3845 CPU with 2 GB 1333 MHz DDR3L memory)	12V@2.75A, 5VSB@0.30A, 5V@3.15A (Intel Xeon D-1518 2.2GHz with two 8GB 2133 MHz DDR4 memory)	12V@2.57A, 5VSB@0.04A, 5V@0.02A (Intel® Core™ i7-6600U with two 8GB 2400 MHz DDR4 memory)	12V@0.54A, Vcore_12V@0.95A (Intel® Celeron® J1900 CPU with two 8 GB 1333 MHz DDR3 memory)	3.3V@0.13A, 5V@0.13A, 12V@1.35A, 5VSB@0.12A (Intel® Atom™ E3845 CPU with 2 GB on-board memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset				
Operation Environment	Temperature Range: -20°C ~ 60°C -40°C ~ 85°C (ICE-BT-10-E38001W2) Relative Humidity: 10% ~ 95% non-condensing	Operating Temperature: -20°C ~ 60°C Operating Humidity: 5% ~ 95%, non-condensing		Temperature Range: -20°C ~ 60°C Relative Humidity: 10% ~ 95% non-condensing	Temperature Range: -20°C ~ 60°C -40°C ~ 85°C (iQ7-BT-E38001W2) Relative Humidity: 10% ~ 95% non-condensing
Expansion Slot	3 x PCIe x1 signal to baseboard	1 x PCIe x16 Gen 3 (Bifurcatable to 2x8, 1x8 & 2x4 or 4 x4) 1 x PCIe x8 Gen 3 (Bifurcatable to 1x8 & 2x4) 8 x PCIe x1 (Gen2) signal to baseboard Bifurcatable to 1x8 or 2x4 or 4x1 or 8x1	1 x PCIe x1 signal to base board (Via PCIe x16 channel) 8 x PCIe x1 signal to base board	5 x PCIe x1 signal to baseboard	3 x PCIe x1 signal to baseboard

## » Peripherals



### TB3-40GDP

- ◆ Chipset  
Intel® JHL6540 Thunderbolt™ 3 Controller IC
- ◆ Interface  
PCIe 3.0 x4 (compatible with PCI Express x16/x8/x4 slots)
- ◆ External IO  
2 x Thunderbolt 3 port (USB Type-C)  
1 x Display port
- ◆ Internal IO  
1 x 9 pin thunderbolt header
- ◆ Video  
Support DP1.2 (4096 x 2160 @60 Hz)
- ◆ Dimensions  
104.96 x 68.9 mm



### GPOE-4P

- ◆ Interface  
PCI Express® x1
- ◆ Ethernet  
Intel® I211-AT controller  
9kB jumbo frame  
IEEE 802.3az, IEEE1588
- ◆ Power Input  
12~24V DC input  
1 x Internal DC input (1x4 pin)  
1 x Internal DC input (2x3 pin)  
\*\*Caution! Choose one input only at a time
- ◆ PoE Capability  
Standard mode: IEEE 802.3af with 15.4W / 52V per port  
Dual port mode: IEEE 802.3at with 30W / 52V per port  
(Support for total 90 watts under full load)
- ◆ Operating Temperature  
0°C ~ 60°C
- ◆ Storage Temperature  
-10°C ~ 70°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions  
160 mm x 65 mm
- ◆ Weight  
110g
- ◆ CE/FCC compliant



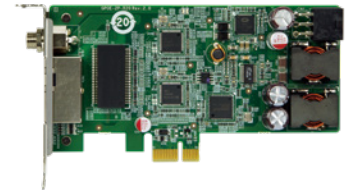
### SATA to CFast™ Converter Board

- CFast™ socket
- 7-pin SATA data connector, and a female 17-pin power CFast™ connector



### SATA to CF Type II Converter Board (SACF-KIT01-R10)

- CF Type II socket
- 50-pin CF Type II connector



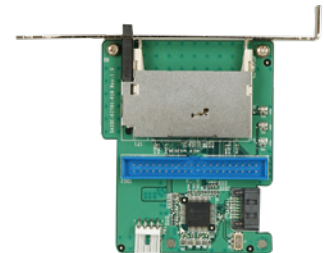
### GPOE-2P

- ◆ Interface  
PCI Express® x1
- ◆ Ethernet  
Intel® I211AT controller  
9kB jumbo frame  
IEEE 802.3az, IEEE1588
- ◆ Power Input  
12~24V DC input  
1 x Internal DC input (1x4 pin)  
1 x External DC Jack (Φ2.1/Φ5.5)  
\*\*Caution! Choose one input only at a time
- ◆ PoE Capability  
IEEE 802.3at  
30W / 52V DC per port  
(Support for total 60 watts under full load)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions: 130 mm x 65 mm
- ◆ Weight: 110g
- ◆ CE/FCC compliant



### IPCIE-4POE

- ◆ Interface: PCI Express® x4
- ◆ Ethernet  
Intel® i210 AT controller  
9kB jumbo frame  
IEEE 802.3az, IEEE1588
- ◆ PoE Capability  
IEEE 802.3af  
15.4W / 48V DC per port
- ◆ PWR Input  
12~24V DC input  
Internal DC input (2x2 ATX)  
External DC input (Φ2.1/Φ5.5)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ CE/FCC compliant



### SATA to IDE/CF Type II Converter Board

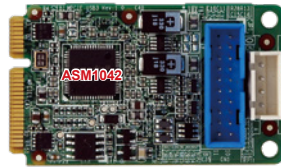
- CF Type II socket
- 40-pin IDE connector (master mode)
- 4-pin 5V input connector
- Power/5V/HDD LED indicator
- Support one IDE device or one CF



### IDE/CF Type II Converter Board (CF-KIT04-R10)

- CF Type II socket with master/slave mode selection
- 4-pin power connector
- Power/HDD signal LED

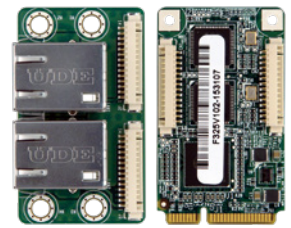
## » Peripherals



### MPCIE-USB3

- ◆ Form Factor: PCI Express Mini card
- ◆ USB 3.2 Gen 1 (5Gb/s) Controller: Asmedia ASM1042A
- ◆ Internal Connector: 1 x 20-pin (2x10) box header
- ◆ Power Jack: 1 x 4-pin box header
- ◆ Compatible OS: Windows® XP/Server 2003/Server 2008/ Vista/7/8.1/10  
Linux kernel version 2.6.32 above

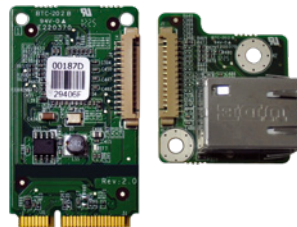
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 50 mm x 30 mm
- ◆ Weight: 70g
- ◆ CE/FCC compliant



### MPCIE-DLAN-R10

- ◆ Form Factor: PCI Express Mini card
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet Controller: Dual Intel® I210-IT
- ◆ Speed: 10/100/1000Mbps
- ◆ External Connector: 2 x 8-pin RJ-45
- ◆ Power Supply: On board 3.3V
- ◆ Compatible OS: Windows XP/Server 2003/ Server 2008/ Vista/ 7/8.1/10  
Linux kernel version 2.6.32 above

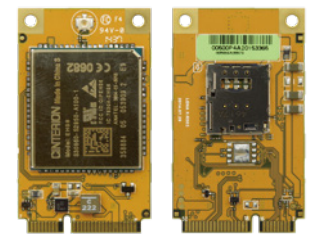
- ◆ Operating Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 51 mm x 30 mm
- ◆ Weight: 55g
- ◆ CE/FCC compliant



### MPCIE-LAN-R10

- ◆ Form Factor: PCI Express Mini card
- ◆ Ethernet Controller: Realtek RTL8111E
- ◆ Speed: 10/100/1000Mbps
- ◆ External Connector: 1 x 8-pin RJ-45
- ◆ Compatible OS: Windows 2000/ XP/ Server 2003/ Server 2008/ Vista/ 7  
Linux kernel version 2.6.32 above
- ◆ Power Supply: On board 3.3V
- ◆ Operating Temperature: -10°C ~ 70°C

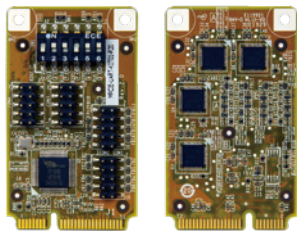
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 51 mm x 30 mm
- ◆ Weight: 70g
- ◆ CE/FCC compliant



### MPCIE-3G-R20

- ◆ Form Factor: PCI Express Mini card
- ◆ Antenna 50Ohms. Main GSM/UMTS antenna
- ◆ Frequency Bands: GSM/GPRS/EDGE: 850/900/1800/1900 GPRS/EDGE Class12 UMTS/HSPA+: Dual band UMTS 800/850/900/1900/2100 MHz
- ◆ USB: USB 2.0 High Speed (480Mbit/s) device interface

- ◆ Compatible OS: Windows®8, Windows®7, Windows EC, Linux, Android
- ◆ Operating Temperature: Normal operation: -30°C to +85°C  
Restricted operation: -40°C to +95°C
- ◆ Dimensions (W x D x H): 51.0 mm x 30.0 mm x 4.75 mm

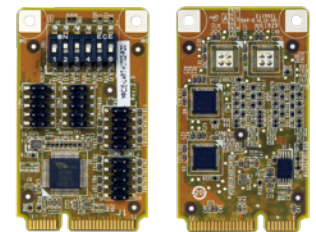


### MPCIE-UART-KIT01-R20

- ◆ Form Factor: PCI Express Mini card
- ◆ PCI Express Bridge to Quad Serial Port: Fintek F81504
- ◆ Buffer/Transceiver Series: F81439
- ◆ IO: 4 x RS-232/422/485 (2x5-pin header)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 51 mm x 30 mm
- ◆ Weight: GW: 100g / NW: 50g
- ◆ CE/FCC compliant

### MPCIE-UART-KIT02-R20

- ◆ Form Factor: PCI Express Mini card
- ◆ PCI Express Bridge to Quad Serial Port: Fintek F81504
- ◆ Buffer/Transceiver Series: F81439
- ◆ IO: 2 x RS-232/422/485 (2x5-pin header)  
2 x 8 bit GPIO (2x5-pin header)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 51 mm x 30 mm
- ◆ Weight: GW: 100g / NW: 50g
- ◆ CE/FCC compliant



### TPM-IN03

- ◆ Interface: SPI interface
- ◆ Solution: Infineon SPI TPM 2.0 with SLB9670VQ2.0 FW7.85
- ◆ Management Tool Function:
  1. TPM management
  2. File & Folder En/De-ryption
  3. Personal secure drive
  4. Secure email

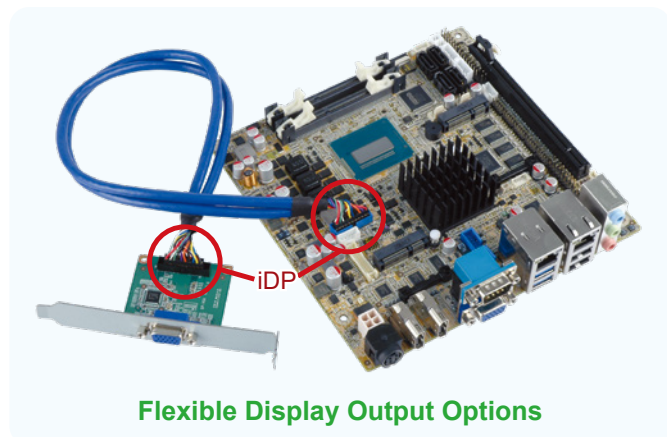
- 5. Key transferring
- 6. Security policy configuration
- 7. SPI interface
- ◆ Market Segment: Complete TPM 2.0 function
- ◆ OS Support: Windows® & Linux
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 26 mm x 18 mm



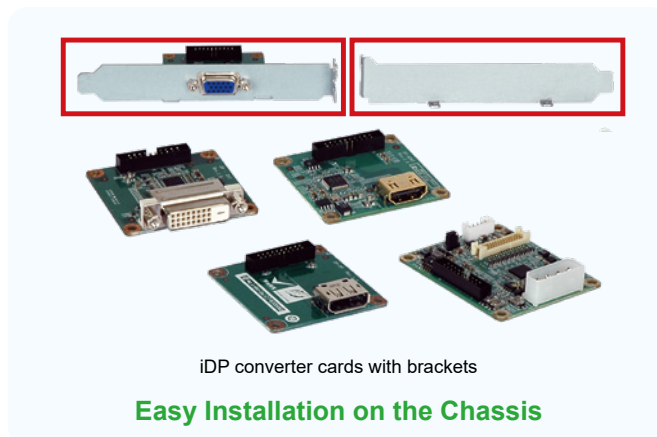
# IEI iDP Introduction

## iDP (IEI Internal DisplayPort)

The iDP connector is provided on the IEI products. Through the IEI iDP converter cards, the iDP connector can support different display specifications, such as VGA, HDMI, DVI-D and LVDS.



Flexible Display Output Options



iDP converter cards with brackets

Easy Installation on the Chassis

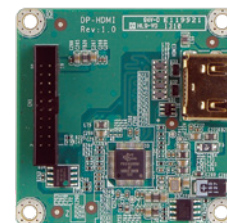
iDP Supported Models			
HPCIE-C236	IMBA-Q170-i2	KINO-DH110	WAFER-AL
HPCIE-Q710	IMBA-H110	KINO-AQ170	WAFER-ULT3/ULT4
SPCIE-C236	IMBA-Q870-i2	KINO-DH810	WAFER-BTW2
PCIE-Q170	IMBA-C2260-i2	KINO-DQM871-i1	WAFER-BT-i1
SPCIE-C2260-i2	IMB-H110	KINO-ABT-i2	WAFER-ULT/ULT2-i1
PCIE-Q870-i2	IMB-Q870-i2	NANO-AL/ALW2	WAFER-KBN-i1
IMBA-C2360-i2	IMB-H810-i2	NANO-ULT3	

### DP-DP-R10



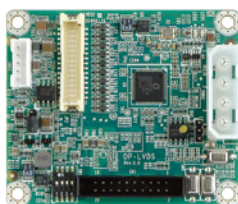
- ◆ Display Input: 1 x IEI iDP connector
- ◆ Display Output: 1 x DisplayPort
- ◆ Temperature: -20°C ~ 60°C
- ◆ Humidity: 5 ~ 95% non-condensing
- ◆ Dimensions: 50 mm x 50 mm

### DP-HDMI-R10



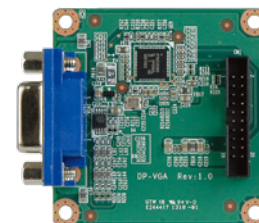
- ◆ Display Input: IEI iDP connector
- ◆ Display Output: 1 x HDMI 1.3a
- ◆ Display IC: Parade - PS161 (DP to HDMI 1.3a)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5 ~ 95% non-condensing
- ◆ Dimensions: 50 mm x 50 mm

### DP-LVDS-R10



- ◆ Display Input: 1 x IEI iDP connector
- ◆ Display Output: 1 x LVDS 24-bit dual-channel
- ◆ Display IC: Chronitel - CH7511B (DP to LVDS)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5% ~ 95 non-condensing
- ◆ Dimensions: 60 mm x 50 mm

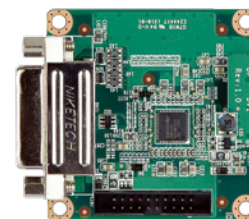
### DP-VGA-R10



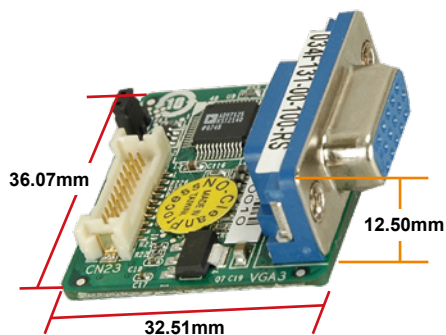
- ◆ Display Input: 1 x IEI iDP connector
- ◆ Display Output: 1 x VGA
- ◆ Display IC: NXP - PTN3392 (DP to VGA)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5% ~ 95 non-condensing
- ◆ Dimensions: 50 mm x 50 mm

### DP-DVI-R10

- ◆ Display Input: 1 x IEI iDP connector
- ◆ Display Output: 1 x DVI
- ◆ Display IC: Parade - PS161 (DP to HDMI / DVI)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5% ~ 95 non-condensing
- ◆ Dimensions: 50 mm x 50 mm



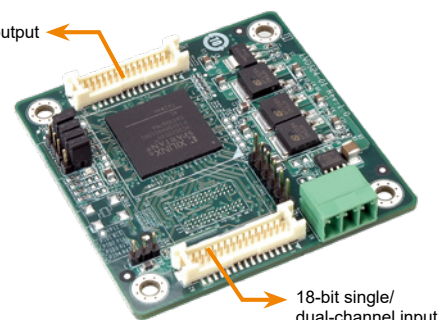




### LVDS-VGA-R10

- ◆ Provide 2nd VGA option for dual VGA display
- ◆ Resolution adjusted by BIOS: Support 1024x768, 800x600, 640x480
- ◆ 18-bit LVDS to VGA converter board

24-bit dual-channel output



### LVDS24-01

- ◆ Resolution supports up to 1280x1024
- ◆ Support below configuration:
  - » Single-channel 18-bit to single-channel 24-bit
  - » Single-channel 18-bit to dual-channel 24-bit
  - » Dual-channel 18-bit to dual-channel 24-bit
- \* Note: The module does not support dual-channel 18-bit to single-channel 24-bit conversion.

## Wireless LAN Module



Model	EMB-WIFI-KIT
Standard	IEEE 802.11a/b/g/n/ac, Wi-Fi compliant / Bluetooth4.0 Standard
Major chipset	Realtek RTL8821AE
Antenna	2x standard U.FL Connector
Frequency range	Wi-Fi: 2.4 GHz, BT: 2402MHz~2483MHz
Modulation	Wi-Fi: 802.11a/g/n/ac: OFDM 802.11b: CCK(11, 5.5Mbps), DQPSK(2Mbps), BPSK(1Mbps)
Receive Sensitivity	Wi-Fi: 802.11a: less than -65 dBm (54M) 802.11b: less than -76 dBm (11M) 802.11g: less than -65 dBm (54M) 802.11n @2.4GHz: less than -64 dBm (HT20 MCS7) 802.11n @2.4GHz: less than -61 dBm (HT40 MCS7) 802.11n @5GHz: less than -64 dBm (HT20 MCS7) 802.11n @5GHz: less than -61 dBm (HT40 MCS7) 802.11ac @5GHz: less than -51 dBm (VHT80 MCS9) BT: BER < 0.1% (Anritsu 8852B Tx -70 dBm)
Driver support	Windows 7/8, Linux kernel 3.18
Temperature	00~700C
Dimensions	29.85mm x 26.65mm x 1.5 mm
Weight	NW: 3.28g

Model	WMPCIE-V02-R10
Standards	IEEE 802.11a/b/g/n/ac Wi-Fi with Bluetooth 4.0/3.0 + HS (Wi-Fi:PCI-E, BT:USB)
Interface	PCIe Mini card
Connectors	2XU.FL(I-PEX) antenna connectors
Controller Chip	Realtek RTL8821AE
Frequency Range	Wi-Fi: 2.4/5GHz, BT: 2402 MHz~2483 MHz
Modulation Type	Wi-Fi: 802.11a/g/n/ac: OFDM 802.11b: CCK, DQPSK, BPSK BT: Header GFSK Payload 2M: 4-DQPSK Payload 3M: 8DPSK
Supported OS	Windows 7/8/10
Receiver Sensitivity	Wi-Fi: 802.11a: less than -65 dBm (54M) 802.11b: less than -76 dBm (11M) 802.11g: less than -65 dBm (54M) 802.11n@2.4GHz: less than -64 dBm (HT20 MCS7) 802.11n@5GHz: less than -64 dBm (HT20 MCS7) 802.11ac@5GHz: less than -51 dBm (VHT80 MCS9) BT: BER < 0.1% (Anritsu 8852B Tx -70 dBm)
Temperature	Operating: 0°C ~ 70°C Storage: -40°C ~ 85°C
Humidity	5% ~ 95%, non-condensing
Dimensions	29.85mm x 26.65mm
Weight	NW: 3.28g
Compliance Certifications	FCC, CE

# » Transportation System



Model	IKARPC-07A-BT	AFOKAR-08A-RK39	IKARPC-W10A-BT	
Chassis	<b>Color</b>	Black C + Silver	Black C + Silver	Blue C + Black C
	<b>Dimensions (WxDxH) (mm)</b>	210 x 154 x 28	210 x 154 x 33.9	277 x 186 x 27
	<b>System Fan</b>	Fanless		
	<b>Chassis Construction</b>	PC + ABS plastic	PC + ABS plastic front, metal rear	PC + ABS plastic
Display	<b>Size</b>	7"	8"	10.1"
	<b>Resolution</b>	1024 x 3 (RGB) x 600	800(RGB) x 1280	1280 x 800
	<b>Brightness (cd/m<sup>2</sup>)</b>	500	500	350
	<b>Contrast Ratio</b>	700:1	800 : 1	800:1
	<b>Pixel Pitch (mm)</b>	0.05 (W) x 0.15 (H)	0.13455(H) x 0.13455(V)	0.0565 (W) x 0.1695 (H)
	<b>Viewing Angle (H/V)</b>	130° (H) / 140° (V)	85/85/85/85 Deg.	150° (H)/145° (V)
	<b>Touchscreen</b>	Projected capacitive touch with USB interface	Projected capacitive with AG coating	Projected capacitive with AG coating
Motherboard	<b>CPU</b>	Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)	Rockchip RK3399 (Dual-core Cortex-A72 up to 1.8GHz + Quad-core Cortex-A53 up to 1.5GHz)	Intel® Atom™ processor E3826 (dual-core, 1.46 GHz, 7W)
	<b>Chipset</b>	SoC		
	<b>System Memory</b>	On-board 2 GB SDRAM	On-board 2GB LPDDR3-1866	On-board 2 GB DDR3L
Storage	<b>Hard Drive</b>	N/A	N/A	1 x 2.5" SATA 3Gb/s HDD/SSD drive bay
	<b>SD card</b>	1 x microSD slot (supports SD 2.0, max. 32 GB)	1 x microSD slot	1 x SD slot (supports SD 2.0, max. 32 GB)
	<b>Flash</b>	N/A	On-board 16GB eMMC NAND FLASH	N/A
	<b>mSATA</b>	1 x mSATA (SATA 3Gb/s) optional	N/A	N/A
Communication	<b>WLAN</b>	PCIe Mini Wi-Fi 802.11a/b/g/n/ac (optional)	On-board 802.11 a/b/g/n/ac	PCIe Mini Wi-Fi 802.11a/b/g/n/ac (optional)
	<b>Bluetooth</b>	BT 4.0/3.0+HS (combo with Optional WLAN module)	Bluetooth V4.1	BT 4.0/3.0+HS (combo with Optional WLAN module)
	<b>WWAN</b>	PCIe Mini WCDMA/HSDPA/HSUPA (optional)	PCIe Mini LTE (optional)	PCIe Mini WCDMA/HSDPA/HSUPA (optional)
	<b>RFID</b>	N/A	13.56 MHz ISO4443 A/B, read-write capable, ISO 14443A (MIFARE), ISO 14443B (FeliCa)	N/A
	<b>GPS</b>	On-board GPS		
	<b>20-pin Connector</b>	1 x GbE LAN, 1 x OBD-II/J1939, 1 x USB 2.0	1 x OBD-II/J1939 1 x USB 2.0	N/A
I/O Interfaces	<b>24-pin Connector</b>	1 x Audio line-out(R+L) 1 x Audio line-in 1 x RS-232 4-bit digital I/O (2-bit input, 2-bit output)	1 x Audio out 1 x RS-232 1 x RS-485 4-bit digital I/O with isolation (2-bit input, 2-bit output)	N/A
	<b>USB 3.2 Gen 1</b>	1		
	<b>USB 2.0</b>	1	20-pin connector	1
	<b>Ethernet</b>	N/A	N/A	1 x RJ-45 PCIe GbE by Realtek 8111E
	<b>COM Port</b>	N/A	24-pin connector	2 x DB-9 RS-232
	<b>Digital I/O</b>	N/A	24-pin connector	8-bit digital I/O (4-bit input, 4-bit output)
	<b>CAN-Bus/OBD-II</b>	N/A	20-pin connector	1 x DB-9 OBD-II/J1939
	<b>Display</b>	1 x HDMI		
	<b>SIM</b>	2 x On-board SIM card slot	1 x On-board SIM card slot	2 x On-board SIM card slot
	<b>Antenna</b>	1 x GPS, 1 x WWAN		
Expansions	<b>PCIe Mini</b>	1 x Full-size (reserved for mSATA module), 1 x Full-size (reserved for WWAN module), 1 x Half-size (reserved for WLAN module)	1 x Full-size (reserved for WWAN)	1 x Full-size (reserved for WWAN module), 1 x Full-size (reserved for WLAN module)
Multimedia	<b>Speaker</b>	1 x Speaker (2 W)		
	<b>Camera</b>	2-megapixel CMOS	5-megapixel CMOS	2-megapixel CMOS
Power	<b>Power Input</b>	Cigarette lighter power cable, DC 9 V~30 V		
	<b>Power Consumption</b>	12V @ 1.25 A	12V @ 1.2A	12 V @ 1.73 A
Reliability	<b>Mounting</b>	VESA 75	VESA 75	VESA 100
	<b>Operating Temperature</b>	-10°C ~ 60°C with air flow	-10°C ~ 50°C with air flow	-10°C ~ 60°C with air flow
	<b>Weight (Net/Gross)</b>	0.9 kg/2.1 kg	0.77 kg	1.3 kg/2.8 kg
	<b>Safety/EMC</b>	CE/FCC/E-Mark/IP 54 compliant front panel	CE/FCC (Class A)/E-mark/IP54 front panel compliant	CE/FCC/E-Mark/IP 64 compliant front panel
OS	<b>Supported OS</b>	Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E	Android 7.1	Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E



# Transportation System



Model		IVS-300	IVS-200-ULT2	IVS-110-AL
Chassis	Color	Blue C	Blue C	Black
	Dimensions (WxDxH) (mm)	255 x185 x80	255 x 150 x 63	261 x 60 x 170
	System Fan	Fanless	Fanless	Fanless
	Chassis Construction	Extruded aluminum alloy	Extruded aluminum alloy	Extruded aluminum alloy
Motherboard	CPU	Intel® Celeron® J1900 processor (quad-core 2GHz, 10W TDP) or Intel® Core™ i5-6300U processor (dual-core, 2.4 GHz, 15W TDP)	Intel® Core™ i5-5350U processor (dual-core, 1.8 GHz, 15W TDP) or Intel® Celeron® 3765U processor (dual-core, 1.9 GHz, 15W TDP)	Intel® Atom™ x7 E3950 processor (quad-core, 2.0GHz, 12W TDP)
	Chipset	SoC	SoC	SoC
	System Memory	IVS-300-BT: 2 x 204-pin DDR3L SO-DIMM. 4GB pre-installed (system max. 8 GB) IVS-300-ULT3: 2 x 260-pin DDR4 SO-DIMM, 4GB pre-installed (system max. 32 GB)	2 x 204-pin DDR3L SO-DIMM slot 4 GB pre-installed (system max. 16 GB)	2 x 204-pin DDR3L SO-DIMM. 4GB pre-installed (system max. 8GB)
Storage	Hard Drive	2 x 2.5" SATA 6Gb/s HDD/SSD removable drive bay	1 x 2.5" SATA 6Gb/s HDD/SSD removable drive bay	1 x 2.5" SATA 6Gb/s HDD/SSD drive bay
	SD Card	N/A	N/A	N/A
	Flash	N/A	N/A	1 x eMMC 5.0 8GB (reserved)
	mSATA	N/A	1 x mSATA (SATA 6Gb/s)	1 x mSATA (PCIe Mini Slot) 1 x eMMC 5.0 8G (reserved)
Communication	WLAN	PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)	PCIe Mini Wi-Fi 802.11b/g/n (optional)	PCIe Mini Wi-Fi 802.11 a/b/g/n/ac (optional)
	Bluetooth	BT 4.0/3.0+HS (combo with Optional WLAN module)	Bluetooth 2.1 (combined with WWAN optional module)	BT 4.0/3.0+HS (combo with Optional WLAN module)
	WWAN	PCIe Mini WCDMA/HSDPA/HSUPA (optional)	PCIe Mini WCDMA/HSDPA/HSUPA (optional)	PCIe Mini WCDMA/HSDPA/HSUPA (optional)
	RFID	N/A	N/A	N/A
	GPS	On-board GPS	N/A	On-board GPS
I/O Interfaces	USB 3.2 Gen 1	2	2	4
	USB 2.0	N/A	2	N/A
	Ethernet	4 x RJ-45 PCIe GbE by Intel® i210-AT Support PoE IEEE802.3af (Each port max 15.4W)	4 x RJ-45 connector LAN1: PCIe GbE by Intel® I218 LAN2: PCIe GbE by Intel® I211 LAN3: PCIe GbE by Intel® I211 LAN4: PCIe GbE by Intel® I211	1 x RJ-45 PCIe GbE by Intel® I210-IT
	COM Port	2 x DB-9 RS-232 1 x DB-15 (with isolation) RS-422/485	2 x DB-9 RS-232/422/485 4 x DB-9 RS-232 (optional)	1 x DB-9 RS-232/422/485 (BIOS configuration)
	Digital I/O	(with isolation) 8-bit digital I/O (4-bit input / 4-bit output)	8-bit digital I/O (4-bit input / 4-bit output) (optional)	1 x Printer port 16-bit digital I/O (8-bit input / 8-bit output)
	CAN-bus/OBD-II	1 x DB9 OBD-II/J1939	N/A	1 x DB9 OBD-II/J1939
	Display	1 x VGA, 1 x HDMI	1 x VGA, 1 x HDMI	1 x VGA, 1 x HDMI
	Resolution	VGA : Up to 1920 x 1080 @60 Hz HDMI : Up to 1920 x 1080 @60 Hz	VGA: Up to 2560 x 1600 @60 Hz HDMI: Up to 3840 x 2160 @60 Hz	VGA : Up to 1920 x 1600 @60 Hz HDMI : Up to 3840 x 2160 @30 Hz
	Audio	1 x Line out, 1 x Mic in	1 x Line out, 1 x Mic in	1 x Line out
	SIM	2 x On-board SIM card slot	1 x On-board SIM card slot	2 x On-board SIM card slot
	Antenna	1 x 3G, 1 x GPS, 1 x BT, 1 x Wi-Fi	1 x 3G, 1 x BT, 1 x Wi-Fi	1 x 3G, 1 x GPS, 1 x BT, 1 x Wi-Fi
	PCI	N/A	N/A	N/A
	PCIe Mini	1 x Half-size (reserved for WLAN) 1 x Full-size (reserved for WWAN) 1 x Full-size (USB signal)	1 x Full-size (reserved for WWAN or mSATA) 1 x Half-size (reserved for WLAN)	1 x Full/Half-size (reserved for WWAN) 1 x Full/Half-size (reserved for mSATA or E-window) 1 x Half-size (reserved for WLAN)
Power	Power Input	Cigarette lighter power cable : DC 9 V~30 V	DC jack : 9 V~36 V DC	Cigarette lighter power cable : 9 V~ 36 V DC
	Power Consumption	12 V @ 14A (Intel® i5-6300U with 4 GB DDR4 memory + 4 PoE)	12 V @ 2.1 A (Intel® i5-5350U with 4 GB DDR3 memory)	12V @ 5A (Intel® Atom™ x7 E3950 with 8 GB DDR3 memory)
Reliability	Mounting	Wall mount	VESA 100	Wall mount / VESA 100
	Operating Temperature	-20°C ~60°C with air flow	-20°C ~ 60°C with air flow (SSD)	-30°C ~ 70°C with air flow
	Weight (Net/Gross)	3 kg / 4.5 kg	2.2 kg / 3 kg	2.4kg / 3.8kg
	Safety/EMC	CE/FCC/E-Mark	CE/FCC/E-Mark	CE/FCC/E-Mark/ IP rating : IP 4X compliant
OS	Supported OS	Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E	Microsoft® Windows Embedded 8, Microsoft® Windows Embedded Standard 7 E	Microsoft® Windows 10 IoT Enterprise

# » Transportation System



Model		IRS-100-ULT3	SBX-100-QM87	
Chassis	Color	Blue C	Black	
	Dimensions (WxDxH) (mm)	290 x 225 x 69	290 x 225 x 75	
	System Fan	Fanless	Fanless	
	Chassis Construction	Extruded aluminum alloy	Extruded aluminum alloy	
Motherboard	CPU	Intel® Core™ i5-6300U processor (dual-core, 2.4 GHz, 15W TDP)	Intel® mobile Core™ i5-4400E (2.7 GHz, 37W)	
	Chipset	SoC	Intel® QM87	
	System Memory	2 x 260-pin DDR4 SO-DIMM 4GB pre-installed (system max. 32 GB)	2 x 204-pin DDR3 SO-DIMM slot (system max. 16 GB) Pre-installed 4 GB DDR3 SO-DIMM	
IPMI	iRIS Solution	N/A	1 x iRIS-2400	
Storage	Hard Drive	2 x 2.5" SATA 6Gb/s HDD/SSD drive bay	2 x 2.5" SATA 6Gb/s SSD bay with RAID 0/1 function	
	CFast/CF Card	1 x CFast	1 x CFast	
	Flash	N/A	N/A	
	mSATA	1 x mSATA	N/A	
	PS/2 (KB/MS)	N/A	1	
I/O Interfaces	USB 3.2 Gen 1	2	2	
	USB 2.0	1 (M12 connector)	2	
	Ethernet	2 x M12 connector PCIe GbE by Intel® I211	2 x RJ-45 with teaming support 1 x PCIe GbE by Intel® I217LM 1 x PCIe GbE by Intel® I210-AT (2 with 2 kV isolation)	
	COM Port	2 x DB-9 RS-232/422/485 (with 1.5 kV isolation)	1 x DB-9 (non-isolated) 4 x RS-232/422/485 (with 2.5 kV isolation)	
	Digital I/O	1 x Terminal block 8-bit digital I/O (4-bit input / 4-bit output, 1.5 kV isolation)	N/A	
	CAN-bus/OBD-II	N/A	2 x CAN-bus (with 2.5 kV isolation)	
	Display	1 x VGA, 1 x DVI-D	1 x VGA, 1 x DVI-D, 1 x HDMI	
	Resolution	VGA : Up to 1920 x 1200 @60Hz DVI-D : Up to 1920 x 1200 @60Hz	VGA: Up to 1920 x 1200 @ 60 Hz HDMI: Up to 2500 x 1600 @ 60 Hz DVI-D: Up to 2500 x 1600 @ 60 Hz	
	Audio	1 x Line-out, 1 x Mic-in	1 x Line-out, 1 x Line-in, 1 x Mic-in	
	TPM	N/A	N/A	
	SIM	2 x SIM card slot	N/A	
	Antenna	1 x 3G, 1 x BT, 2 x Wi-Fi	2 x Antenna SMA hole (reserved)	
	Expansions	PCIe Mini	2 x Full-size (for WWAN / WLAN module)	2 x Full-size
	Power	Power Input	M12 connector: Typical: 24V / 110V DC input	Terminal block: Isolated 24V DC (18~31.2 V DC)
Power Consumption		24V @ 2A (Intel® i5-6300U with 4 GB DDR4 memory)	100 W (Intel® mobile Core™ i5-4400E with 4 GB DDR3 memory)	
Reliability	Mounting	Wall mount	Wall mount	
	Operating Temperature	-40°C ~ 70°C with air flow (with industrial SSD/CF), compliant with EN 50155	*-15°C ~ 55°C (5°F ~ 131°F) with air flow (SSD)	
	Weight (Net/Gross)	3.9 kg / 5.1 kg	4.08 kg / 6.03 kg	
	Safety/EMC	CE/FCC Compliance with EN50155, EN50121	EMC/CE/FCC/DNV, IEC 60945 4 <sup>th</sup> , IACS-E10, IEC 61174 compliant IP rating: IP22 compliant rear cover	
OS	Supported OS	Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E	Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E	

# Industrial Automation System



Model		TANK-880-Q370	TANK-871-Q170	TANK-870-Q170
Chassis	Color	Black C + Silver	Black C + Silver	Black C + Silver
	Dimensions (WxDxH) (mm)	169 x 255.2 x 225	82.2 x 255.2 x 204	2-slot: 121.5 x 255.2 x 205 4-slot: 154.8 x 255.2 x 205
	System Fan	Fanless	Fanless	Fanless
	Chassis Construction	Extruded aluminum alloys	Extruded aluminum alloys	Extruded aluminum alloys
Motherboard	CPU	8 <sup>th</sup> Gen Intel® Core™ CPU & Intel® Core™ i7-9700TE 1.8GHz (up to 3.8GHz, 8-core, TDP 35W) Intel® Core™ i5-9500TE 2.2GHz (up to 3.6GHz, 6-core, TDP 35W)	7 <sup>th</sup> Gen Intel® Core™ CPU & Intel® Core™ i7-6700TE (2.4 GHz, quad-core, TDP=35) Intel® Core™ i5-6500TE (2.3 GHz, quad-core, TDP=35)	
	Chipset	Intel® Q370	Intel® Q170	Intel® Q170
	System Memory	2 x SO-DIMM DDR4 2666/ 2400 (8GB Pre-installed) (system max: 64GB)	2 x 260 pin DDR4 SO-DIMM, Pre-installed one 4GB (system max: 32GB)	2 x 260-pin DDR4 SO-DIMM, one 4 GB pre-installed (system max: 32GB)
IPMI	iRIS Solution	N/A	1 x iRIS-2400 (optional)	1 x iRIS-2400 (optional)
Storage	Hard Drive	4 x 2.5" SATA 6Gb/s HDD/SSD bay (RAID 0/1/5/10 support)	2 x 2.5" SATA 6Gb/s HDD/SSD bay (RAID 0/1 support)	2 x 2.5" SATA 6Gb/s HDD/SSD bay (RAID 0/1 support)
	mSATA	1 x mSATA	1 x mSATA	1 x mSATA
I/O Interfaces	USB 3.2 Gen 1	6	4	4
	USB 2.0	N/A	4	4
	Ethernet	3 x RJ45 1 x PCIe GbE by I219 controller 2 x PCIe GbE by I210 controller	2 x RJ-45 LAN1: Intel® I219LM PCIe controller LAN2 (iRIS): Intel® I210 PCIe controller	2 x RJ-45 LAN1: Intel® I219LM PCIe controller LAN2 (iRIS): Intel® I210 PCIe controller
	COM Port	3 x RS-232/422/485 DB-9 with 2.5kV isolation	4 x RS-232 (2 x RJ-45, 2 x DB-9 w/ isolation) 2 x RS-232/422/485 (DB-9)	4 x RS-232 (2 x RJ-45, 2 x DB-9 w/ isolation) 2 x RS-232/422/485 (DB-9)
	Digital I/O	8-bit digital I/O, 4-bit input / 4-bit output	8-bit digital I/O, 4-bit input / 4-bit output	8-bit digital I/O, 4-bit input / 4-bit output
	Display	1 x HDMI 1.4b/ 1 x DP	1 x VGA, 1 x HDMI/DP, 1 x iDP (optional)	1 x VGA, 1 x HDMI/DP, 1 x iDP (optional)
	Resolution	1 x HDMI (Up to 3840x2160@30Hz) 1 x DP (Up to 4096x2304@60Hz)	1 x VGA (Up to 1920 x 1200@60Hz) 1 x HDMI/DP (Up to 3840x2160@30Hz / 4096x2304@60Hz)	1 x VGA (Up to 1920 x 1200@60Hz) 1 x HDMI/DP (Up to 3840x2160@30Hz / 4096x2304@60Hz)
	Audio	1 x Line-out, 1 x Mic-in	1 x Line-out ; 1 x Mic-in	1 x Line-out, 1 x Mic-in
	Wireless	1 x 802.11a/b/g/n/ac (optional)	1 x 802.11 a/b/g/n/ac (optional)	1 x 802.11 a/b/g/n/ac (optional)
	Expansions	Backplane	1 x PCIe x16 1 x PCIe x1 2 x PCIe x4	N/A
PCIe Mini		1 x Full-size (PCIe/ USB 2.0/ SATA)	1 x Half-size (PCIe/ USB 2.0) 1 x Full-size (PCIe/ USB 2.0/ SATA)	1 x Half-size (PCIe/ USB 2.0) 1 x Full-size (PCIe/ USB 2.0/ SATA)
Power	Power Input	DC Jack: 9 V ~ 36 V DC Terminal Block: 9 V ~ 36 V DC	DC Jack: 9 V ~ 36 V DC Terminal Block: 9 V ~ 36 V DC	DC Jack: 9 V ~ 36 V DC Terminal Block: 9 V ~ 36 V DC
	Power Consumption	19V @ 3.6A (Intel® Core™ i7-8700T with 8GB memory)	19 V@3.68 A (Intel® Core™ i7-6700TE with 8 GB memory)	19 V@3.68 A (Intel® Core™ i7-6700TE with 8 GB memory)
	Internal Power Connector	12V@10A	5V@3A or 12V@3A	5V@3A or 12V@3A
Reliability	Mounting	Wall mount	Wall mount	Wall mount
	Operating Temperature	-20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing	i7-6700TE: -20°C ~ 45°C with air flow (SSD), 10% ~ 95%, non-condensing i5-6500TE: -20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing	i7-6700TE: -20°C ~ 45°C with air flow (SSD), 10% ~ 95%, non-condensing i5-6500TE: -20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis	Half-sine wave shock 5G; 11ms; 100 shocks per axis	Half-sine wave shock 5G, 11ms, 100 shocks per axis
	Operating Vibration	MIL-STD-810G 514.6C-1 (with SSD)	MIL-STD-810G 514.6 C-1 (with SSD)	MIL-STD-810G 514.6 C-1 (with SSD)
	Weight (Net/Gross)	5.4 kg/8.45 kg	3.5 kg/4.5 kg	2-slot: 4.2 kg/6.3 kg 4-slot: 4.5 kg/6.5 kg
	Safety/EMC	CE/FCC	CE/FCC	CE/FCC
OS	Supported OS	Microsoft® Windows 10, Linux	Microsoft® Windows® 8 Embedded, Microsoft® Windows® Embedded Standard 7 E, Microsoft® Windows® 10 IoT Enterprise	

# Industrial Automation System



Model		TANK-870e-H110	TANK-860-HM86	TANK-801-BT	
Chassis	Color	Dark silver purple + Silver	Black C + Silver	Black C + Silver	
	Dimensions (WxDxH) (mm)	132.6 x 255.2 x 190	2-slot: 121.5 x 255.2 x 205 4-slot: 154.8 x 255.2 x 205 6-slot: 195.4 x 255.2 x 205	136 x 219 x 188	
	System Fan	Fanless	Fanless	Fanless	
	Chassis Construction	Extruded aluminum alloys	Extruded aluminum alloys	Extruded aluminum alloys	
Motherboard	CPU	7 <sup>th</sup> Gen Intel® Core™ CPU & Intel® Core™ i7-6700TE (2.4 GHz, quad-core, TDP=35) Intel® Core™ i5-6500TE (2.3 GHz, quad-core, TDP=35)	Intel® Core™ i5-4400E 2.7 GHz Intel® Celeron® 2000E 2.2 GHz	Intel® Celeron® J1900 2 GHz	
	Chipset	Intel® H110	Intel® HM86	SoC	
	System Memory	2 x 260-pin DDR4 SO-DIMM, one 4 GB pre-installed (system max: 32GB)	2 x 204-pin DDR3 SO-DIMM, one 4GB pre-installed (system max: 16 GB)	1 x 204-pin DDR3L SO-DIMM, 2GB pre-installed (system max: 8 GB)	
IPMI	iRIS Solution	N/A	1 x iRIS-2400 (optional)	1 x iRIS-2400 (optional)	
	Hard Drive	1 x 2.5" SATA 6Gb/s HDD/SSD bay	2 x 2.5" SATA 6Gb/s HDD/SSD bay	1 x 2.5" SATA 3Gb/s HDD/SSD bay	
Storage	CF Card/CFast	N/A	1 x CFast	1 x CFast	
	USB 3.2 Gen 1	4	4	2	
I/O Interfaces	USB 2.0	N/A	2	2	
	Ethernet	2 x RJ-45 PCIe GbE by RTL8111G controller	2 x RJ-45 1 x PCIe GbE by Intel® I210 1 x PCIe GbE by Intel® I217LM	2 x RJ-45 1 x PCIe GbE by Intel® I210 1 x PCIe GbE by Intel® I211	
	COM Port	2 x RS-232/422/485 (DB-9, w/ isolation)	4 x RS-232 (DB-9, two with isolation) 2 x RS-422/485 (RJ-45)	2 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9, with isolation)	
	Digital I/O	N/A	8-bit digital I/O, 4-bit input/4-bit output	16-bit digital I/O, 8-bit input/8-bit output	
	Display	1 x VGA, 1 x HDMI 1.4	1 x VGA, 1 x DVI-I, 1 x DisplayPort	1 x DisplayPort, 1 x DVI-I	
	Resolution	VGA: Up to 1920 X 1200@60Hz HDMI: Up to 3840x2160@30Hz	VGA: Up to 1920 x 1200@60Hz DVI-I: Up to 2500 x 1600@60Hz Displayport: Up to 2500 x 1600@60Hz	DisplayPort: Up to 2560 x 1600 MHz DVI-I: Up to 2560 x 1600 MHz	
	Audio	1 x Line-out, 1 x Mic-in	1 x Line-out, 1 x Mic-in	1 x Line-out, 1 x Mic-in	
	Wireless	1 x 802.11a/b/g/n/ac (optional)	1 x 802.11a/b/g/n/ac (optional)	1 x 802.11a/b/g/n/ac (optional)	
	Expansions	PCI/PCIe	3A: 1 x PCIe x16, 2 x PCI 3B: 1 x PCIe x16, 1 x PCIe x4, 1 x PCI 3C: 3 x PCI	2 A: Two PCIe x8 (physical PCIe x16 slot) 4 A: Two PCIe x8 (physical PCIe x16 slot) + 2 x PCI 6 A: One PCIe x8 (physical PCIe x16 slot) + two PCIe x4 + three PCI	3A: One PCIe x1 + Two x PCI 3B: Two PCIe x1 + One x PCI 3C: Three x PCI
		PCIe Mini	1 x Full-size (PCIe/ USB 2.0) 1 x Full-size (PCIe/ USB 2.0/ SATA)	2A: 1 x Full-size (PCIe/ USB 2.0/ SATA) 4A: 1 x Full-size (PCIe/ USB 2.0/ SATA) + 1 x Full-size (PCIe/ USB 2.0) (on backplane) 6A: 1 x Full-size (PCIe/ USB 2.0/ SATA) + 1 x Full-size (PCIe/ USB 2.0) (on backplane)	1 x Full-size (PCIe/ USB 2.0)
Power	Power Input	DC Jack: 9 V ~ 36 V DC Terminal Block: 9 V ~ 36 V DC	DC Jack: 9 V ~ 36 V DC Terminal Block: 9 V ~ 36 V DC	DC Jack: 9 V ~ 36 V DC Terminal Block: 9 V ~ 36 V DC	
	Power Consumption	19 V@3.44 A (Intel® Core™ i7-6700TE with 8 GB memory)	19 V@3.34 A (Intel® Core™ i5-4400E with 4 GB memory)	19 V@1.8 A (Intel® Celeron® J1900 with 2 GB DDR3 memory)	
Reliability	Mounting	Wall mount & Din Rail	Wall mount	Wall mount	
	Operating Temperature	-20°C ~ 50°C with air flow (SSD), 10% ~ 95%, non-condensing	-20°C ~ 60°C with air flow (SSD), 5% ~ 95%, non-condensing	-20°C ~ 60°C with air flow (SSD), 5% ~ 95%, non-condensing	
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis	Half-sine wave shock 5G, 11ms, 3 shocks per axis	Half-sine wave shock 5G, 11ms, 3 shocks per axis	
	Operating Vibration	MIL-STD-810G 514.6C-1 (with SSD)	MIL-STD-810F 514.5C-2 (with SSD)	MIL-STD-810F 514.5C-2 (with SSD)	
	Weight (Net/Gross)	2.8 kg/4.3 kg	2-slot: 4.2 kg/6.3 kg 4-slot: 4.5 kg/6.5 kg 6-slot: 4.8 kg/6.9 kg	2.8 kg/4.3 kg	
OS	Safety/EMC	CE/FCC	CE/FCC	CE/FCC	
	Supported OS	Microsoft® Windows® 8 Embedded, Microsoft® Windows® Embedded Standard 7 E, Microsoft® Windows® 10 IoT Enterprise	Microsoft® Windows® 8 Embedded, Microsoft® WEST7E, Microsoft® Windows® 10 IoT Enterprise	Microsoft® Windows® 8 Embedded, Microsoft® WEST7E, Microsoft® Windows® 10 IoT Enterprise	

# Industrial Automation System



Model		TANK-620-ULT3	TANK-610-BW
Chassis	Color	Black C + Silver	Black C + Silver
	Dimensions (WxDxH) (mm)	260 x 200 x100	184 x 200.6 x 58.2
	System Fan	Fanless	Fanless
	Chassis Construction	Extruded aluminum alloy	Extruded aluminum alloy
Motherboard	CPU	Intel® Celeron® 3855U (1.6GHz, TDP=15W)	Intel® Celeron® N3160 processor (up to 2.24GHz, quad-core, TDP=6W)
	Chipset	SoC	SoC
	System Memory	1 x 260-pin DDR4 SO-DIMM 1 x On-board DDR4 4GB pre-installed (system max: 32GB)	2 x 204-pin DDR3L SO-DIMM, one 2GB pre-installed (system max: 8 GB)
IPMI	iRIS Solution	N/A	N/A
Storage	Hard Drive	2 x 2.5" SATA 6Gb/s HDD/SSD Bay	1 x 2.5" SATA 6Gb/s HDD/SSD bay
	CF Card/CFast	1 x CF card (optional)	N/A
outI/O Interfaces	USB 3.2 Gen 1	4	4
	USB 2.0	4	N/A
	Ethernet	2 x RJ-45 PCIe GbE by Intel® I211-AT controller	2 x RJ-45 PCIe GbE by Intel® I210-IT controller
	Fiber	N/A	N/A
	COM Port	6 x RS-232 (DB-9) 8 x RS-232/422/485 ports with automatic flow control (DB-9)	6 x RS-232 2 x RS-232/422/485
	Digital I/O	1 x 24-bit digital I/O	N/A
	CAN-bus	N/A	N/A
	Display	2 x VGA, (1 x LVDS or 1 x VGA optional)	1 x VGA, 1 x HDMI
	Resolution	VGA: Up to 1920 x 1200 @60Hz LVDS: Up to 1920 x 1200 @60Hz (optional)	VGA: Up to 1920 x 1200@60HZ HDMI: Up to 3840 x 2160@30Hz
	Audio	1 x Mic in, 1 x Speaker out, 1 x Line out	1 x Line-out, 1 x Mic-in
	Wireless	1 x 802.11a/b/g/n/ac (optional)	1 x 802.11a/b/g/n/ac (optional)
	Other	1 x Power button, 1 x System reset, 1 x AT/ATX switch	1 x Power button, 1 x System reset, 1 x AT/ATX switch
Expansions	PCI	N/A	N/A
	PCIe	N/A	N/A
	PCIe Mini	2 x Full-size (PCIe/ USB 2.0)	1 x Full-size (PCIe/ SATA), 1 x Half-size (PCIe/ USB 2.0)
Power	Power Input	9 ~ 36 V DC +/- 5%	DC Jack: 9 V ~ 36 V DC
	Power Consumption	12V@2.73A (Intel® Celeron® 3855U with 8GB memory)	12 V@1.49 A (Intel® Celeron® N3160 with 4 GB DDR3L memory)
Reliability	Mounting	Wall Mount	Wall mount, VESA 100
	Operating Temperature	-30 ~ 70 °C with air flow (SSD), 10% ~ 95%, non-condensing	-40°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis	Half-sine wave shock 5G, 11ms, 100 shocks per axis
	Operating Vibration	MIL-STD-810G 514.6C-1 (with SSD)	MIL-STD-810G 514.6C-1 (with SSD)
	Weight (Net/Gross)	4.4 kg/6.5 kg	2.2Kg/3Kg
Safety/EMC	CE/FCC	CE/FCC	
OS	Supported OS	Microsoft® Windows 8 Embedded, Microsoft® Windows® Embedded Standard 7 E, Microsoft® Windows® 10	Microsoft® Windows 8 Embedded, Microsoft® WES7E, Microsoft® Windows® 10 IoT Enterprise

# DIN-Rail Embedded System



Model		DRPC-230-ULT5	DRPC-130-AL	DRPC-120-BT
Chassis	Color	Black and Silver	Black	Black
	Dimensions (WxDxH) (mm)	190 x 150 x 81	58.75 x 130 x 174	74.08 x 140 x 171.5
	System Fan	Fanless	Fanless	Fanless
	Chassis Construction	Extruded aluminum alloys	Extruded aluminum alloys	Extruded aluminum alloys
Motherboard	CPU	Intel® Core™ i5-8365UE Processor (Whiskeylake-U)	Intel® Atom™ x5-E3930 1.3GHz (up to 1.8 GHz, dual core, TDP=6.5W)	Intel® Atom™ E3845 1.91GHz
	Chipset	SoC	SoC	SoC
	System Memory	2 x DDR4 2400Hz SO-DIMM (system max. 32GB)	1 x 204-pin DDR3L SO-DIMM slot (system max. 8 GB) (DRPC-130-AL-E1/4GB SKU is pre-installed with 4 GB memory)	1 x 204-pin DDR3L SO-DIMM, 2 GB pre-installed (system max: 8GB)
IPMI	iRIS Solution	N/A	N/A	1 x iRIS-2400 (optional)
Storage	Hard Drive	1 x 2.5" SATA 6Gb/s HDD/SSD bay	1 x 2.5" SATA 6Gb/s HDD/SSD bay	1 x 2.5" SATA 3Gb/s HDD/SSD bay
	eMMC	N/A	1 x eMMC 5.0 support (up to 32GB, optional)	N/A
I/O Interfaces	USB 3.2 Gen 1	6	4	2
	USB 2.0	1 by pin header	1 by pin header	2
	Ethernet	3 x RJ45 1 x PCIe GbE by Intel® I219 controller 2 x PCIe GbE by Intel® I210 controller	2 x RJ-45 PCIe GbE by Intel® I211 controller	2 x RJ-45 1 x PCIe GbE by Intel® I210 controller 1 x PCIe GbE by Intel® I211 controller
	COM Port	4 x RS-232/422/485 (DB9) 2 x RS232 (RJ45)	4 x RS-232/422/485 (DB-9)	2 x RS-232 (DB-9 w/ 3kV isolation protection*) 2 x RS-422/485 (DB-9 w/ 3kV isolation protection*)
	Digital I/O	8-bit digital I/O, 4-bit input/ 4-bit output (DB-9)	8-bit digital I/O, 4-bit input/4-bit output (DB-9)	8-bit digital I/O, 4-bit input/4-bit output
	CAN-bus	N/A	1 x DB-9 w/ 2.5kV isolation protection, supporting 2-port CAN-bus	N/A
	Display	1 x Lockable HDMI, 1 x DP	2 x HDMI 1.4b	1 x VGA, 1 x HDMI
	Resolution	1 x HDMI (up to 3840 x 2160@30Hz) 1 x DP (up to 4096 x 2304@60Hz)	Up to 3840 x 2160@30Hz	Up to 1920 x 1200 @ 60Hz
	SIM	1x On-board SIM slot	1 x Internal on-board SIM slot (optional)	N/A
	Audio	N/A	N/A	N/A
	Wireless	1 x 802.11a/b/g/n/ac (optional)	1 x 802.11a/b/g/n/ac (optional)	1 x 802.11a/b/g/n/ac (optional)
	TPM	1 x TPM 2.0 (2 x 10 pin) (optional)	1 x TPM 2.0 (2 x 10 pin) (optional)	N/A
	Other	1 x Power button 1 x LED for HDD (yellow) 1 x Reset button 1 x LED for power (green) 1 x AT/ATX switch	1 x Power button 1 x LED for HDD (yellow) 1 x Reset button 1 x LED for power (green) 1 x AT/ATX switch	N/A
	Expansions	PCIe Mini	1 x Full-size (PCIe/USB 2.0/SATA) 1 x Full-size (PCIe x4)	1 x Half-size (PCIe/ USB 2.0) 1 x Full-size (PCIe/ USB 2.0/ SATA)
M.2		1 x 2230 A-Key (PCIe/USB2.0) 1 x 2280 B-key (PCIe x4) (on backplane)	N/A	N/A
Power	Power Input	3-pin terminal block: 12 ~ 24V DC	3-pin terminal block: 12 V ~ 24 V DC	3-pin terminal block: 9 V ~ 30 V DC
	Power Consumption	12V @ 4.98A	12V @ 2.88 A (Intel® Atom™ x5-E3930 CPU with 4GB 1600 MHz DDR3L memory)	12 V @ 2.1 A (Intel® Atom™ E3845 with 2 GB memory)
	Remote PWR	N/A	PSON 2-pin terminal block	N/A
Reliability	Mounting	DIN-Rail	DIN-rail / Wall mounting	DIN-rail
	Operating Temperature	-20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing	-20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing	-20°C ~ 60°C with air flow (mSATA), 5% ~ 95%, non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis, IEC68-2-27	Half-sine wave shock 5G, 11ms, 100 shocks per axis, IEC68-2-27	Half-sine wave shock 5G, 11ms, 3 shocks per axis
	Operating Vibration	MIL-STD-810G 514.6C-1 (SSD)	MIL-STD-810G 514.6C-1 (SSD)	MIL-STD-810F 514.5C-2 (with SSD)
	Weight (Net/Gross)	2.9kg	1.4kg/2.5kg	1.4 kg/2.5 kg
	Safety/EMC	CE/FCC	CE/FCC	CE/FCC
Watchdog Timer	Programmable 1 ~ 255 sec/min	Programmable 1 ~ 255 sec/min	N/A	
OS	Supported OS	Microsoft® Windows 10, Linux	Microsoft® Windows 10 / Linux	Microsoft® 8, Microsoft® Windows® Embedded Standard 7 E



# Compact Size Embedded System



	Model	ITG-100AI	ITG-100-AL	uIBX-250-BW
Chassis	Color	Blue & Silver	Blue & Silver	Black
	Dimensions (WxDxH) (mm)	137 x 102.8 x 49.4	ITG-100-AL-E1/S: 137 x 102.8 x 36.2 ITG-100-AL-E1: 137 x 102.8 x 56.2	136.6 x 102.4 x 52
	System Fan	Fanless	Fanless	Fanless
	Chassis Construction	Extruded aluminum alloy	Extruded aluminum alloy	Extruded aluminum alloy
Motherboard	CPU	Intel® Atom™ x5-E3930 1.3GHz (up to 1.8GHz, dual-core, TDP=6.5W)	Intel® Atom™ x5-E3930 1.3GHz (up to 1.8GHz, dual-core, TDP=6.5W)	Intel® Celeron® N3160 (up to 2.24GHz, quad-core, 2 MB cache, TDP=6W)
	Chipset	SoC	SoC	SoC
	System Memory	1x 204-pin DDR3L SO-DIMM slot pre-installed with 8 GB memory	1 x 204-pin DDR3L SO-DIMM, 2 GB pre-installed (system max: 8GB)	1 x 204-pin DDR3L SO-DIMM, 2 GB pre-installed (system max: 8GB)
Storage	Hard Drive	Pre-installed 128GB SATADOM	1 x 2.5" SATA 6Gb/s HDD/SSD bay (for ITG-100-AL-E1 SKU only)	1 x 2.5" SATA 6Gb/s HDD/SSD bay
	CF Card/CFast	N/A	N/A	N/A
I/O Interfaces	USB 3.2 Gen 1	2	2	4
	USB 2.0	N/A	2 by pin-header (optional)	N/A
	Ethernet	2 x RJ-45 PCIe GbE by Intel® I211-AT controller	2 x RJ-45 PCIe GbE by Intel® I211-AT controller	2 x RJ-45 PCIe GbE by Intel® I211 controller
	COM Port	2 x RS-232/422/485 (DB-9/RJ-45)	2 x RS-232/422/485 (DB-9/RJ-45) 2 x RS-232 by pin-header (optional)	2 x RS-232/422/485 (RJ-45)
	Button	1 x Power button 1 x AT/ATX switch 1 x Reset button	1 x Power button 1 x AT/ATX switch 1 x Reset button	1 x Power button 1 x AT/ATX switch 1 x Reset button
	Display	1 x VGA	1 x VGA	1 x HDMI, 1 x VGA
	Resolution	Up to 1920x1080@60Hz	Up to 1920x1080@60Hz	HDMI: 3840 x 2160@30MHz VGA: 1920 x 1200@60Hz
	Audio	N/A	N/A	1 x Line-out, 1 x Mic-in
	Wireless	1 x 802.11a/b/g/n/ac (optional)	1 x 802.11a/b/g/n/ac (optional)	1x 802.11a/b/g/n/ac (optional)
	Expansions	PCIe Mini	Pre-installed Mustang-MPCIE-MX2 AI accelerator card	1 x Full-size (PCIe/ USB 2.0/ SATA)
M.2		1 x 2230 A key (PCIe x1/ USB 2.0)	1 x 2230 A key (PCIe x1/USB 2.0)	N/A
Power	Power Input	2-pin terminal block: 9 ~ 36V DC-in	2-pin terminal block: 12 V DC	DC jack: 12 V DC
	Power Consumption	12V @ 1.2A (Intel® Atom™ E3930 with 8GB memory)	12V @ 1A (Intel® Atom™ E3930 with 2GB memory)	12V @ 2A (Intel® Celeron® N3160 with 2 GB memory)
Reliability	Mounting	DIN-rail	DIN-rail / Wall mount	Wall mount, VESA 75
	Operating Temperature	-20°C ~ 50°C with air flow, 10% ~ 95%, non-condensing	-20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing	-20°C ~ 60°C with air flow (SSD), 10% ~ 95%, non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis, IEC68-2-27	Half-sine wave shock 5G, 11ms, 100 shocks per axis, IEC68-2-27	Half-sine wave shock 5G, 11ms, 3 shocks per axis
	Operating Vibration	MIL-STD-810G 514.6C-1	MIL-STD-810G 514.6C-1 (SSD)	MIL-STD-810F 514.5 C-1(HDD), MIL-STD-810F 514.5 C-2(SSD)
	Weight (Net/Gross)	895 g/1.7 kg	ITG-100-AL-E1/S: 0.67 kg/1.03 kg ITG-100-AL-E1: 0.86 kg/1.22 kg	470 g/1.4 kg
Safety/EMC	CE/FCC	CE/FCC	CE/FCC	
OS	Supported OS	Microsoft® Windows 10 / Linux, Ubuntu 16.04 LTS	Microsoft® Windows 10 / Linux	Microsoft® Windows 8, Microsoft® Embedded Standard 7 E

# Compact Size Embedded System



Model		IDS-310-AL-N1	IDS-310-AL-J1
Chassis	Color	Brown & Silver	
	Dimensions (WxDxH)	137 x 102.8 x 38.1 mm	137 x 102.8 x 52.1 mm
	System Fan	Fanless	
	Chassis Construction	Extruded aluminum alloys	
Motherboard	CPU	Intel® Celeron® N3350E (up to 2.4GHz, dual-core, TDP 6W)	Intel® Celeron® J3455E (up to 2.3GHz, quad-core, TDP 10W)
	Chipset	SOC	
	System Memory	1 x 204-pin DDR3L SO-DIMM, 4 GB pre-installed (system max: 8GB)	
Storage	Hard Drive	1 x SATA 6Gb/s connector	
	Micro SD	1 x Micro SD (optional)	
I/O Interfaces	Ethernet	2 x RJ-45 PCIe GbE by RTL8111 controller	
	USB 3.2 Gen1 (5Gb/s)	3	
	COM Port	1 x RS-232/422/485	
	Display	3 x HDMI 1.4b (3840x2160@30Hz)*	
	Audio	1 x Line-out, 1 x Mic-in	
	Wireless	1 x 802.11 a/b/g/n/ac (optional)	
	TPM 2.0	Optional	
Expansions	PCIe Mini	1 x Full-size (PCIe/ USB 2.0/ SATA) with SIM card slot	
	M.2	1 x 2230 A key (PCIe x1/ USB 2.0)	
Power	Power Input	12V DC-in	
	Power Consumption	12V @ 1.9A (Intel® Celeron® N3350E with 4GB memory)	12V @ 2.2A (Intel® Celeron® J3455E with 4GB memory)
Reliability	Mounting	VESA 75/100/Wall mount	
	Operating Temperature	-20°C ~ 60°C with air flow (mSATA), 10% ~ 95%, non-condensing	
	Storage Temperature	-30°C ~ +80°C	
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis	
	Operation Vibration	MIL-STD-810G 514.6C-1 (mSATA)	
	Weight (Net/Gross)	680g/1.4kg	950g/1.7kg
	Safety / EMC	CE, FCC Class A, BSMI	
	Watchdog Timer	Programmable 1 ~ 255 sec/min	
OS	Supported OS		Microsoft® Windows® 10, Linux

\* The source of HDMI 3 is eDP, which does not support audio.

# Embedded Chassis Series



Model		BRICK-KINO	BRICK-WAFER	BRICK-NANO
Platform		Case only		
Chassis	Color	Black		
	Dimensions (WxDxH) (mm)	203 x 178 x 64	220 x 143 x 55	
	System Fan	N/A	N/A	N/A
	Chassis Construction	N/A	N/A	N/A
Motherboard	Motherboard Model	tKINO-ULT3 / KINO-DAL KINO-DBT / tKINO-AL tKINO-BW / eKINO-BT	WAFER-AL WAFER-BT-E38001W2	NANO-AL NANO-BT
	SBC Size (mm)	Mini-ITX (170 x 170)	3.5" (146 x 102)	3.5" (165 x 115)
Buttons		Power switch		
Reliability	Operating Temperature	0°C ~ 40°C		
	Operating Shock	Half-sine wave 3G, 11ms 3 shocks per axis		
	Operating Vibration	MIL-STD-810F 514.5C-1		
	Weight (Net/Gross)	1.25kg/1.5kg	1.2kg/1.5kg	

# Embedded Chassis Series



Model	EBC-3300	EBC-3220	EBC-3100	
<b>Platform</b>	Case only	Case only	Case only	
<b>Chassis</b>	<b>Color</b>	Black	Black	
	<b>Dimensions (WxDxH) (mm)</b>	190 x 190 x 43	190 x 180 x 55	260 x 250 x 156
	<b>System Fan</b>	--	1 x 4 cm	1 x 8 cm
	<b>Chassis Construction</b>	Heavy duty metal	Heavy duty metal	Heavy duty metal with plastic front panel
<b>Motherboard</b>	<b>Motherboard Model</b>	tKINO-BW KINO-DQM170 KINO-DH810 KINO-DBT eKINO-BT KINO-DA750-i2 KINO-V1000/R1000 KINO-DH310 KINO-DH110 KINO-DAL	tKINO-AL tKINO-ULT3 KINO-KBN/SE-i2 KINO-DQM871-i1 KINO-DH610 KINO-QM770 KINO-QM670 KINO-QM57A KINO-HM551	KINO-AQ170 KINO-ABT KINO-AA750-i2 KINO-AQ870 KINO-AQ670 KINO-AH611 KINO-AH612
	<b>SBC Size (mm)</b>	Mini-ITX (170 x 170)	Mini-ITX (170 x 170)	Mini-ITX (170 x 170)
<b>Storage</b>	<b>Hard Drive</b>	1 x 2.5" SATA HDD drive bay	1 x 2.5" SATA HDD drive bay	1 x 3.5" SATA HDD space
	<b>CF Card/CFast</b>	N/A	N/A	Refer to SBC
	<b>SD Card</b>	Refer to SBC	Refer to SBC	Refer to SBC
<b>I/O Interfaces</b>	<b>PS2 (KB/MS)</b>	N/A	N/A	Refer to SBC
	<b>USB 3.2 Gen 1</b>	Refer to SBC	Refer to SBC	Refer to SBC
	<b>USB 2.0</b>	Refer to SBC	Refer to SBC	Refer to SBC
	<b>Ethernet</b>	2	2	2
	<b>COM Port</b>	Refer to SBC	Refer to SBC	Refer to SBC
	<b>LPT</b>	Refer to SBC	Refer to SBC	Refer to SBC
	<b>Display</b>	Refer to SBC	Refer to SBC	Refer to SBC
	<b>Resolution</b>	Refer to SBC	Refer to SBC	Refer to SBC
	<b>Audio</b>	Refer to SBC	Refer to SBC	Refer to SBC
<b>Wireless</b>	Refer to SBC	Refer to SBC	Refer to SBC	
<b>Expansions</b>	<b>PCI</b>	N/A	N/A	N/A
	<b>PCIe</b>	N/A	N/A	1 x Full-height expansion slot
	<b>PCIe Mini</b>	Refer to SBC	Refer to SBC	Refer to SBC
	<b>Others</b>	1 x E-Window	N/A	N/A
<b>Power</b>	<b>Power Input</b>	12V DC	12V DC	90~264V AC
	<b>Power Supply</b>	12V DC	12V DC	ACE-A618C 180W ACE-A627A 270W
<b>Reliability</b>	<b>Mounting</b>	VESA 100, wall mount	VESA 100, wall mount	Desktop, wall mount
	<b>Operating Temperature</b>	-10°C~50°C	-10°C~50°C	0°C ~ 50°C
	<b>Operating Shock</b>	Half-sine wave 3G, 11ms 3 shocks per axis		
	<b>Operating Vibration</b>	MIL-STD-810F 514.5C-1		
	<b>Weight (Net/ Gross)</b>	1 kg/2 kg	1 kg/2 kg	2.5 kg/3.9 kg

\* Optional items

\*\* Systems with hard drive meet MIL-STD-810F 514.5C-1 specifications. SSD/CF systems meet MIL-STD-810F 514.5C-1 specifications.

# Embedded Chassis Series



Model	EBC-3000	EBC-2200	EBC-2100	EBC-1100
<b>Platform</b>	Case only	Case only	Case only	Case only
<b>Chassis</b>	<b>Color</b>	Black	Black	Cool gray
	<b>Dimensions (WxDxH) (mm)</b>	280 x 230 x 88	215 x 150 x 55	262 x 134 x 56
	<b>System Fan</b>	1 x 6 cm	1 x 4 cm	1 x 4 cm*
	<b>Chassis Construction</b>	Heavy duty metal with plastic front panel	Aluminum alloy with heavy duty metal	
<b>Motherboard</b>	<b>Motherboard Model</b>	KINO-AQ170 KINO-ABT KINO-AA750-i2 KINO-AQ870 KINO-AQ670 KINO-AH611 KINO-AH612	NANO-BT-i1 NANO-BTW2 NANO-QM871	NANO-LX
	<b>SBC Size (mm)</b>	Mini-ITX (170 x 170)	EPIC (165 x 115)	EPIC (165 x 115)
<b>Storage</b>	<b>Hard Drive</b>	1 x 3.5" SATA HDD space	1 x 2.5" SATA 6Gb/s HDD/SSD drive bay	1 x 2.5" SATA HDD space
	<b>CF Card/CFast</b>	Refer to SBC	N/A	1
	<b>SD Card</b>	Refer to SBC	N/A	N/A
<b>I/O Interfaces</b>	<b>PS2 (KB/MS)</b>	Refer to SBC	Refer to SBC	1
	<b>USB 3.2 Gen 1</b>	Refer to SBC	Refer to SBC	N/A
	<b>USB 2.0</b>	Refer to SBC	Refer to SBC	4
	<b>Ethernet</b>	2	2	1
	<b>COM Port</b>	Refer to SBC	Refer to SBC	1+2 RS-232*
	<b>LPT</b>	Refer to SBC	N/A	*1
	<b>Display</b>	Refer to SBC	Refer to SBC	1 x VGA
	<b>Resolution</b>	Refer to SBC	Refer to SBC	N/A
	<b>Audio</b>	Refer to SBC	1 x Line out, 1 x Mic-in	3 x Audio jack*
<b>Expansions</b>	<b>Wireless</b>	Refer to SBC	1 x 802.11b/g/n	N/A
	<b>PCI</b>	N/A	N/A	N/A
	<b>PCIe</b>	N/A	N/A	N/A
	<b>PCIe Mini</b>	Refer to SBC	1 x Full-size PCIe Mini card slot	N/A
<b>Power</b>	<b>Others</b>	N/A	N/A	1 x PCI-104
	<b>Power Input</b>	90~264V AC	12V DC	12V DC in
<b>Reliability</b>	<b>Power Supply</b>	ACE-A618C 180W ACE-A627A 270W	12V, 5A	12 V DC in, AT mode only, with 60W power adapter
	<b>Mounting</b>	Desktop, wall mount	Wall mount, VESA 100	Desktop, wall mount
	<b>Operating Temperature</b>	0°C ~ 50°C	-20°C ~ 60°C	0°C ~ 50°C
	<b>Operating Shock</b>	Half-sine wave 3G, 11ms 3 shocks per axis	Half-sine wave shock 5G, 11ms, 3 shocks per axis	Half-sine wave 3G, 11ms 3 shocks per axis
	<b>Operating Vibration</b>	MIL-STD-810F 514.5C-1		
<b>Weight (Net/Gross)</b>	2.5 kg/3.9 kg	1.1kg/2kg	1 kg/3 kg	1.2Kg/2.2Kg

# SBC Embedded System



Model		ECN-380-QM87	ECN-360A-ULT3	ECW-281B-BT
Chassis	Color	Silver	Black	Black
	Dimensions (WxDxH) (mm)	265 x 134 x 56.7	255 x 130 x 75	229 x 132 x 64
	System Fan	Fanless	Fanless	Fanless
	Chassis Construction	Aluminum alloy with heavy duty metal	SECC	Aluminum alloy with heavy duty metal
Motherboard	Motherboard Model	NANO-QM871-i1	NANO-ULT3	WAFER-BT-1
	SBC Size (mm)	EPIC (165 x 115)	EPIC, 165 x 115	3.5", 146 x 102
	CPU	Intel® Core™ i5-4400E 2.7 GHz Intel® Celeron® 2000E 2.2 GHz	Intel® Core™ i5-6300U Intel® Celeron® 3855U	Intel® Celeron® J1900 quad-core 2.42GHz
	Chipset	Intel® QM87	N/A	SoC
	System Memory	One 204-pin DDR3 4GB SO-DIMM pre-installed (system max: 8GB)	2 x 260-pin 2133/1866 MHz dual-channel DDR4 SO-DIMMs support up to 32GB Pre-install 4GB DDR4	1 x 204-pin 2 GB 1066/1333 MHz single-channel DDR3L SO-DIMM (system max. 4 GB)
IPMI	iRIS Solution	1 x iRIS-1010	N/A	1 x iRIS-1010-R10
	Storage	Hard Drive	2 x 2.5" SATA 6Gb/s HDD/SSD bay	2 x 2.5" SATA HDD bay (No RAID support)
	CF Card/CFast	N/A	N/A	N/A
I/O Interfaces	USB 3.2 Gen 1	2	4	1
	USB 2.0	4	N/A	3
	Ethernet	2 x RJ-45 LAN1: Intel® I217LM PHY with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller	LAN1: Intel® I219-LM LAN2: Intel® I211-AT	LAN 1: PCIe GbE by Intel® I210 controller LAN 2: PCIe GbE by Intel® I211 controller
	COM Port	2 x RS-232	1 x RS-232/422/485 2 x RS-232	3 x RS-232 1 x RS-422/485
	Digital I/O	N/A	8-bit digital I/O	8-bit digital I/O (4-bit input, 4-bit output)
	Display	2 x HDMI, 1 x VGA	2 x HDMI	1 x VGA
	Resolution	VGA: Up to 1920x1200@60Hz HDMI: Up to 2500x1600@60Hz	HDMI: up to 4096x2160@24Hz	VGA: 2560x1600@60Hz
	Audio	1 x Line-out, 1 x Mic-in	1 x Line-out	1 x Line out
	Wireless	1 x 802.11b/g/n	2 x 802.11b/g/n (optional)	1 x 802.11b/g/n
Expansions	PCIe Mini	1 x Full-size PCIe Mini (supports mSATA, SATA 6Gb/s signal only) 1 x Half-size PCIe Mini (only for iRIS-1010)	1 x Full-size PCIe Mini card slot (with SIM holder & mSATA support) 1 x Half-size PCIe Mini card slot	1 x Full-size PCIe Mini card slot (supports mSATA) 1 x Half-size PCIe Mini card (only for iRIS)
	Power	Power Input	DC Jack: 12 V DC 3-pin terminal: 9 V~36 V DC	DC 12V (Optional 9~36V) Power 1: DC jack Power 2: Terminal block( for optional 9~36V only)
	Power Consumption	12 V@4.6 A (Intel® mobile Core™ i5-4400E CPU with 4GB 1333MHz DDR3 memory)	12 V@2.4 A (Intel® i5-6300U with 4GB DDR4 memory)	12V@1.45A (Intel® Celeron® J1900 CPU and one 8 GB 1333 MHz DDR3 memory)
Reliability	Mounting	Wall mount, VESA 100	Wall mount, VESA 100	Wall mount, VESA 100
	Operating Temperature	-20°C ~60°C with air flow (SSD), 10% ~ 95%, non-condensing	-20°C~60°C with air flow (SSD), 5% ~ 95%, non-condensing	-20°C~60°C with air flow (SSD), 10% ~ 95%, non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 3 shocks per axis		Half sine wave 5G, 11ms 3-axis (non-operational)
	Operating Vibration	MIL-STD-810F 514.5C-2 (with SSD)	MIL-STD-810F 514.5C-2 (with SSD)	MIL-STD-810F 514.5C-1 (HDD)
	Weight (Net/Gross)	2.4 kg/4.2 kg	2.2 kg/3 kg	2.1 kg / 3.9 kg

\*Systems with hard drive meet MIL-STD-810F 514.5C-1 specifications. SSD/CF systems meet MIL-STD-810F 514.5C-2 specifications.

# Chassis Selection Guide

Model No.	Type	Board Type		Max. Slots	Drive Capacity				Fan Spec.			
		SBC Slot	Motherboard		5.25" F.P.	3.5" F.P.	2.5" Int	3.5" Int	4 cm	6 cm	8 cm	12 cm
RACK-1150G	1U	PICMG 1.0 full-size/ PICMG 1.3 full-size		3	1			1	3			
RACK-220G	2U	PICMG 1.0 full-size	*microATX, Mini-ITX	6	1	1		1			2	
RACK-305G	4U	Full-size	*ATX, microATX, Mini-ITX	14	2	1		1		***2	2	
RACK-360G	4U	Full-size	*ATX, microATX, Mini-ITX	14	2	1		1		***2		1
RACK-3000G	4U	Full-size	*ATX, microATX, Mini-ITX	14	3	2		1		***2	2	
<b>NEW</b> RACK-500AI	5U	Full-size		5		1		1			1	
ECA-300			ATX, microATX	7	2		1	1				
ECA-200			microATX	4			1	1				
ECA-100			ATX, microATX	7			1	1				
PAC-1000G		Full-size		6	1	1		1			1	
PAC-106G		Full-size		6		1		1			1	
PAC-1700G		Full-size		7	1	1		2			1	
PAC-125G		Full-size		10	2	1		1			1	
PAC-53GH		Half-size		3			1					
PAC-42GH		Half-size		4		△1		△1			1	
PR-1500G		Half-size		5	◇1	1		1			1	
PAC-400G		Half-size		5				△1			1	
PAC-400AI		Half-size		5				△1			1	
PAC-700G		Half-size		7	1	△1		1			1	

Model No.	Indicators		Front Panel Control						Back Panel Control		PSU	Dimensions (mm)			Color	
	Power	HDD	Power	Reset	KB	USB	Keylock	COM	USB	COM		Depth	Height	Width	Black	White
RACK-1150G	○	○	○	○		2					1U	449	44	431	○	
RACK-220G	○	○	○	○		2	○				PS/2	487.5	88	431	○	○
RACK-305G	○	○	○	○	○	2	○				PS/2 or mini redundant	413	176	431	○	○
RACK-360G	○	○	○	○	○	2	○				PS/2 or mini redundant	435.5	176	431	○	○
RACK-3000G	○	○	○	○			○				PS/2 or mini redundant	520	176	431	○	○
<b>NEW</b> RACK-500AI	○	○	○	○		2					1U	440.2	221.3	110.6	(Navy Blue & Black)	
ECA-300	○	○	○	○		2		6			1U	291	162	365	○	
ECA-200	○	○	○	○		2		6			1U	310	162	310	○	
ECA-100	○	○	○	○		2			4	2	PS/2	320	480.5	210		○
PAC-1000G	○	○	○	○							PS/2	421	176	232	○	
PAC-106G	○	○	○	○		2					1U	400	175.5	166		○
PAC-1700G	○	○	○	○							PS/2	433	253.7	192.4	○	
PAC-125G	○	○	○	○		2	○				PS/2	420	176	321		○
PAC-53GH	○	○	○	○		2					1U	218	200	95		○
PAC-42GH	○	○	○	○		2					1U	269	230	140		○
PR-1500G	○	○	○	○		2					1U	254	132	286		○
PAC-400G	○	○	○	○		2					1U	269	230.5	140		○
PAC-400AI	○	○	○	○		2					1U	269	230.5	140	(Navy Blue & Black)	
<b>NEW</b> PAC-700G	○	○	○	○		2	○				1U	279	176	321	○	

■ Rackmount chassis  
■ Full-size wall mount chassis  
■ Half-size wall mount chassis

\* For ATX model  
 \*\*\* Optional fans for ATX model  
 ◇ Slim-type CD-ROM  
 △ Please refer to datasheet for detail information



## » Open Frame

**Safety (ITE Standard)** - CB IEC 60950, UL 60950, CSA C 22.2 No. 60950, TUV EN 60950


**Safety (Medical Standard)** - CB IEC 60601, UL 60601, CSA C 22.2 No. 60601, TUV EN 60601

**EMI** - Meets EN 55022, FCC Part 15, CISPR 22



Meets EN 61000-3-2, EN 61000-3-3 (PFC function)

**EMS** - Meets EN 55024, EN 61000-4-2/3/4/5/6/8/11

\* For detailed specs, please refer to official certification

AC Input											
Product	Model No.	Watt AT/ATX PFC	Input Range		Output Current Range			Efficiency	Operating Temperature	Safety	Dimensions (mm)
			Voltage		+5 V	+12 V	-12 V				
	<b>ACE-890A</b>	86W AT -	85 ~ 264 VAC		10 A	2.5 A	0.5 A	70%	0°C ~ 50°C	CSA CE	152.4 x 89 x 39

## » Redundant Type

AC Input													
Product	Model No.	Watt AT/ATX PFC	Input Range		Output Current Range					Efficiency	Operating Temperature	Safety	Dimensions (mm)
			Voltage		+3.3 V	+5 V	+12 V	-5 V	-12 V				
	<b>ACE-R4140AP</b>	400W ATX PFC	90 ~ 264 VAC	25 A (2 A min.)	25 A (2 A min.)	30 A (2.5 A min.)		0.8 A (0.1 A min.)	2 A (0.1 A min.)	65%	0°C ~ 40°C	UL, TUV, CCC, BSMI, CE, FCC	150 x 85 x 190
	<b>ACE-R4130AP</b>	300W ATX PFC	90 ~ 264 VAC	18 A (1 A min.)	25 A (3 A min.)	16 A (2 A min.)	0.5A	0.5 A	2 A (0.1 A min.)	65%	0°C ~ 50°C	CB, UL, TUV, CCC, CE, FCC	185 x 150 x 86

# 1U/2U Type

**Safety (ITE Standard)** - CB IEC 60950, UL 60950, CSA C 22.2 No. 60950, TUV EN 60950  
**Safety (Medical Standard)** - CB IEC 60601, UL 60601, CSA C 22.2 No. 60601, TUV EN 60601  
**EMI** - Meets EN 55022, FCC Part 15, CISPR 22  
 Meets EN 61000-3-2, EN 61000-3-3 (PFC function)  
**EMS** - Meets EN 55024, EN 61000-4-2/3/4/5/6/8/11

\* For detailed specs, please refer to official certification

1U AC Input														
Products	Model No.	Watt AT/ ATX PFC	Input Range Voltage	Output Current Range						Efficiency	ErP	Operating Temperature	Safety	Dimensions (mm)
				+3.3 V	+5 V	+12 V	-5 V	-12 V	+5 Vsb					
	<b>ACE-A630C</b>	300W ATX -	90 ~ 265 VAC	12 A (0 A)	14 A (0 A)	25 A (0.1 A)		0.5 A	3 A	 87%	V	0°C ~ 50°C	CB/UL/ TUV/ CCC/ CE/FCC	150 x 81.5 x 40.5
	<b>ACE-A622C</b>	220W ATX -	90 ~ 264 VAC	10 A (0.1 A min.)	14 A (0.2 A min.)	14 A (0.6 A min.)		0.3 A	2.5 A	 85%	V	0°C ~ 50°C	CB/UL/ TUV/ CCC/ CE/FCC	150 x 81.5 x 40.5
	<b>ACE-A618C</b>	180W ATX -	90 ~ 264 VAC	10 A (0.1 A min.)	14 A (0.2 A min.)	10 A (0.6 A min.)		0.3 A	2.5 A	 85%	V	0°C ~ 50°C	CB/UL/ TUV/ CCC/ CE/FCC	150 x 81.5 x 40.5
	<b>ACE-A615C</b>	150W ATX -	90 ~ 264 VAC	10 A (0.1 A min.)	14 A (0.2 A min.)	10 A (0.6 A min.)		0.3 A	2.5 A	 85%	V	0°C ~ 50°C	CB/UL/ TUV/ CCC/ CE/FCC	150 x 81.5 x 40.5
	<b>ACE-716AP</b>	150W AT PFC	85 ~ 265 VAC		18 A (1 A min.)	4 A	0.5 A	1 A		75%		-20°C ~ 70°C	UL TUV CE	198 x 97 x 40.5
1U DC Input														
Products	Model No.	Watt AT/ ATX PFC	Input Range Voltage	Output Current Range						Efficiency	Operating Temperature	Safety	Dimensions (mm)	
				+3.3 V	+5 V	+12 V	-5 V	-12 V	+5 Vsb					
	<b>ACE-717CX</b>	170W ATX -	24 VDC (19 ~ 32 VDC)	6 A	8 A (1 A min.)	8 A (1 A min.)		0.5 A	1 A	75%		0°C ~ 70°C	CB UL TUV CCC CE	198 x 97 x 39
	<b>ACE-4520C</b>	200W ATX -	24 VDC (18 ~ 36 VDC)	12 A	12 A (1 A min.)	15.4 A (0.5 A min.)		0.5 A	2 A	78%		0°C ~ 50°C	CB UL TUV CCC NEMKO CE FCC	150 x 81.5 x 40.5
	<b>ACE-716C</b>	150W AT -	24 VDC (19 ~ 30 VDC)		18 A (2 A min.)	4 A	0.5 A	1 A		70%		-20°C ~ 70°C	UL TUV CE	198 x 97 x 40.5

PS/2

**Safety (ITE Standard)** - CB IEC 60950, UL 60950, CSA C 22.2 No. 60950, TUV EN 60950  
**Safety (Medical Standard)** - CB IEC 60601, UL 60601, CSA C 22.2 No. 60601, TUV EN 60601  
**EMI** - Meets EN 55022, FCC Part 15, CISPR 22  
 Meets EN 61000-3-2, EN 61000-3-3 (PFC function)  
**EMS** - Meets EN 55024, EN 61000-4-2/3/4/5/6/8/11

\* For detailed specs, please refer to official certification

AC Input													
Product	Model No.	Watt AT/ATX PFC	Input Range Voltage	Output Current Range						Efficiency	ErP	Operating Temperature	Safety
				+3.3 V	+5 V	+12 V	-5 V	-12 V	+5 Vsb				
	<b>ACE-A160B</b>	600W ATX PFC	90~264 VAC	25 A (0 A)	25 A (0.2 A)	V1: 16 A (0.05 A) V2: 16 A (0 A) V3: 16 A (0 A) V4: 16 A (0 A)	0.5 A (0 A)	0.5 A	4 A	 82%	v	0°C ~ 50°C	CB / UL / TUV CCC / CE / FCC
	<b>Medical ACE-4840APM</b>	400W ATX PFC	90 ~ 265 VAC	30 A (0.5 A min.)	30 A (0.3 A min.)	V1: 17 A (1 A min.) V2: 17 A (1 A min.)	0.3 A	0.8 A	2 A	68%		0°C ~ 50°C	CB / UL CCC / VDE
	<b>ACE-A140B</b>	400W ATX PFC	90 ~ 264 VAC	21 A (0 A)	16 A (0.2 A)	V1: 17 A (0.05 A) V2: 17 A (0 A)	0.1 A (0 A)	0.5 A	3 A	 87%	v	-5°C ~ 50°C	CB / UL / TUV CCC / CE / FCC
	<b>ACE-A140B-S</b>	400W ATX PFC	90 ~ 264 VAC	21 A (0 A)	16 A (0.2 A)	V1: 17 A (0.05 A) V2: 17 A (0 A)	0.1 A (0 A)	0.5 A	3 A	 87%	v	-5°C ~ 50°C	CB / UL / TUV CCC / CE / FCC
	<b>ACE-A130C</b>	300W ATX PFC	90 ~ 264 VAC	19 A (0 A)	16 A (0.2 A)	V1: 17 A (0.05 A) V2: 17 A (0 A)	0.1 A (0 A)	0.5 A (0 A)	3 A (0 A)	 87%	v	0°C ~ 50°C	CB / UL / TUV CCC / CE / FCC
	<b>ACE-A130C-S</b>	300W ATX PFC	90 ~ 264 VAC	19 A (0 A)	16 A (0.2 A)	V1: 17 A (0.05 A) V2: 17 A (0 A)	0.1 A (0 A)	0.5 A (0 A)	3 A (0 A)	 87%	v	0°C ~ 50°C	CB / UL / TUV CCC / CE / FCC
	<b>ACE-925A</b>	200W AT	85 ~ 265 VAC		22 A (1 A min.)	7 A (0.1 A min.)	0.5 A	0.7 A		68%		0°C ~ 50°C	UL
	<b>ACE-935AL</b>	300W AT	85 ~ 140 VAC 170 ~ 270 VAC		40 A (3 A min.)	8 A (0.1 A min.)	0.3 A	0.7 A		68%		0°C ~ 50°C	UL / CE
DC Input													
	<b>ACE-828C</b>	250W ATX	24 VDC (18 ~ 32 VDC)	8 A	25 A (2 A min.)	7 A (0.1 A min.)	0.5 A	1 A	0.72 A	65%		0°C ~ 50°C	CB / CSA TUV / CCC CE

# Adapter Type

**Safety (ITE Standard)** - CB IEC 60950, UL 60950, CSA C 22.2 No. 60950, TUV EN 60950

**Safety (Medical Standard)** - CB IEC 60601, UL 60601, CSA C 22.2 No. 60601, TUV EN 60601

**EMI** - Meets EN 55022, FCC Part 15, CISPR 22

Meets EN 61000-3-2, EN 61000-3-3 (PFC function)

**EMS** - Meets EN 55024, EN 61000-4-2/3/4/5/6/8/11

\* For detailed specs, please refer to official certification

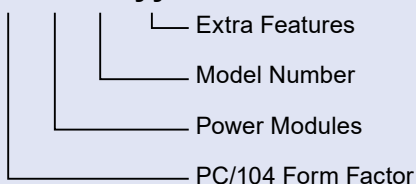
AC Input										
Product	Model No.	Watt	Input Range	Output Current Range		Plug Type	Efficiency	Operating Temperature	Safety	Dimensions (mm)
			Voltage	+12 V	+19 V					
	<b>FSP120-ABBN2</b>	120W	90~264 VAC		6.32 A		91.57%	0°C ~ 40°C	UL/TUV/CCC/CE/GS/PSE/KC/BSMI	75.6 x 15.3 x 25.4
	<b>FSP096-AHAN3</b>	96W	90~264 VAC		8 A		88%	0°C ~ 40°C	UL/TUV/CCC/CE/GS/PSE/KC/BSMI/RCM	75.6 x 15.3 x 25.4
	<b>FSP090-DIEBN2</b>	90W	90~264 VAC		4.74 A		87%	0°C ~ 40°C	UL/TUV/CCC/CE/GS/PSE/KC/BSMI/RCM/EAC/PSB	51 x 129 x 30.9
	<b>FSP065-REBN2</b>	65W	90~264 VAC		3.42 A		89.54%	0°C ~ 40°C	UL/TUV/CCC/CE/BSMI/PSE/PSB/GS/EAC/NOM/RCM/IRAM/Nrcan/Nemko	46.3 x 108.3 x 30
	<b>Medical</b> <b>63040-010060-020</b>	60W	90~264 VAC		5V		85%	0°C ~ 60°C	CB/UL/TUV/CCC/BSMI/CE/FCC	147 x 75 x 49
	<b>FSP060-DHAN3</b>	60W	90 ~ 264 VAC		5V		85%	0°C ~ 40°C	UL/TUV/CCC/GS/PSE/RCM/CE/KC/BSMI	62 x 110 x 31.5
	<b>FSP036-RHBN3</b>	36W	90 ~ 264 VAC		3 A		88.3%	0°C ~ 40°C	UL/TUV/CCC/GS/CE/BSMI/PSE/RCM/KC	37.8 x 89.8 x 27

# » IDD & PM\_P Series

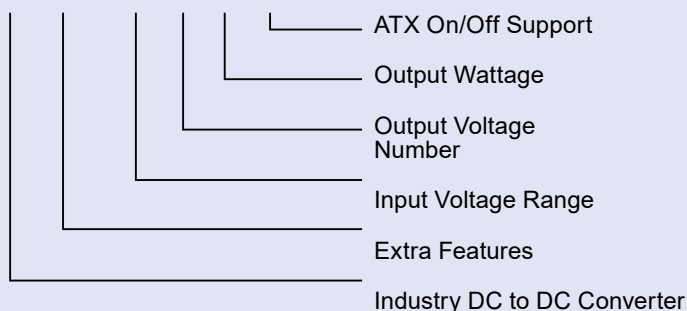
Model No.	Dimensions	Maximum Output Power	Input Voltage	Maximum Output Current						
				12V	5V	3.3V	-12V	5VSB	16V	20V
IDDV-6304140A	45 mm x 160 mm	140 W	6 ~ 30 V	4 A	10 A	10 A	0.15 A	1.5 A	-	-
IDD-9364120A	45 mm x 160 mm	120 W	9 ~ 36 V	4 A	10 A	8 A	0.3 A	2 A	-	-
IDD-241100	40 mm x 100 mm	100 W	24 V	8.3 A	-	-	-	-	-	-
IDD-936160	25 mm x 82 mm	60 W	9 ~ 36 V	5 A	-	-	-	-	-	-
PM-P006UPS	3.775" x 3.55"	65 W	6 ~ 36 V	4 A	10 A	8 A	-	1 A	-	-
IDD-936260A	40 mm x 100 mm	60 W	9 ~ 36 V	3 A	10 A	-	-	0.5 A	-	-
IDD-12250A	40 mm x 100 mm	50 W + 60 W	12 V	5 A	10 A	-	-	0.5 A	-	-

## Naming Conventions:

### PM-P xxx yy



### IDD xx - 630 4 120 A



### Output Power Calculation

$$P \text{ (Wattage)} = V \text{ (Voltage)} \times I \text{ (Current)}$$

Pt = Total Output Power

I1 = Current of Output Voltage1

In = Current of Output Voltagen

V1 = Output Voltage1

Vn = Output Voltagen

$$Pt = V1 \times I1 + V2 \times I2 + \dots + Vn \times In$$

Pt must be less than max. output power and individual output current must not exceed max. output current.

## Dedicated Engineering Team - Professional

Our dedicated team offers application-specific integrated solutions and will design a customized product that will put you out in front of the competition.

Our solutions include standard/non-standard voltages, isolated/non-isolated, any form factor, power sequencing, battery chargers, electromechanical interference protection, thermal management, remote on/off and I/O interface.



## Advanced Test Equipment – Precision & Reliability



Timing/Noise Analyzer Chroma 6011



Electronic Load Chroma 6312 Series



Power Analyzer Chroma 6632





\* Specifications are subject to change without prior notice.

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