

AN0078

ISIS - CPU-14xx Features comparison

Rev 1.0 – 1 December 2011 – ETH_AN0078_EN_1.0

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Revision history

Revision	Description	Date
1.0	First release	1 December 2011

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Foreword

The scope of this application note is to give you a comparison between the following CPU modules:

- ISIS 1.3 GHz
- ISIS 1.6 GHz
- CPU-1452/62
- CPU-1454/64
- CPU-1472/82
- CPU-1474/84

The first section “Features comparison” compares the main features of the CPU modules such as: processor, memory, interfaces and power requirements

The second section “Physical comparison” gives you a graphical comparison of the CPU modules and their interfaces.

The third section “Benchmarks” gives you a comparison of the modules performances.

The software used is “Performance Test - Version: V7.0 (Build 1025)”. Rerer to <http://www.passmark.com/products/pt.htm> for further information.

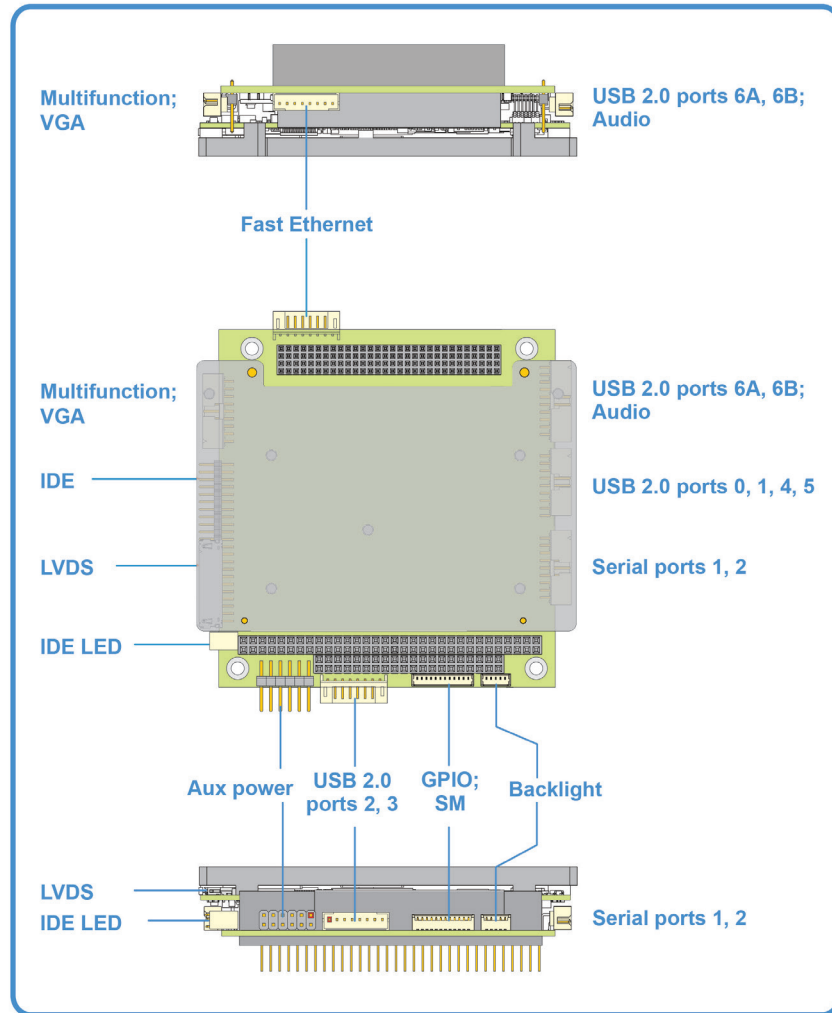
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Features comparison

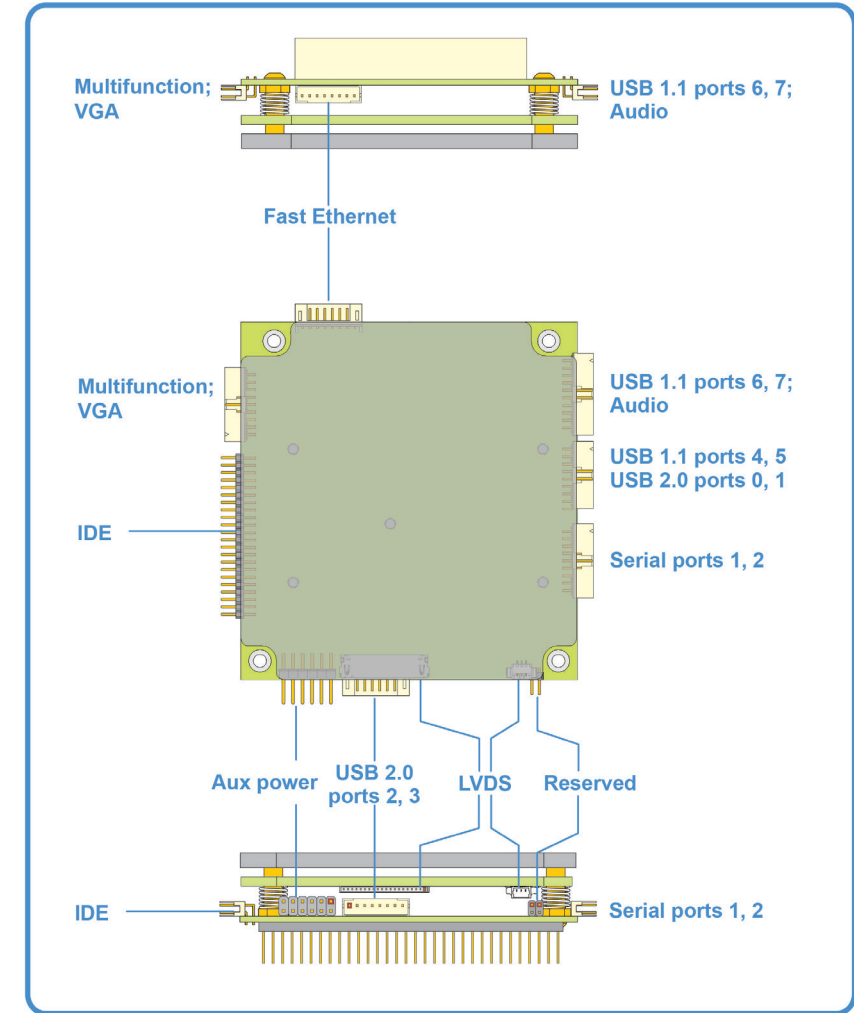
Features	ISIS 1.3GHz	ISIS 1.6GHz	CPU-1452	CPU-1462	CPU-1454	CPU-1464	CPU-1472	CPU-1482	CPU-1474	CPU-1484
Intel Processor	Atom 1.33 GHz	Atom 1.6 GHz	Celeron 400 MHz	Pentium III 800 MHz	Celeron 400 MHz	Pentium III 800 MHz	Celeron M 1 GHz	Pentium M 1.4 GHz	Celeron M 1 GHz	Pentium M 1.4 GHz
Memory	RAM: 1 GB DDR2 SDRAM Flash: 2 GB SSD		RAM: 256MB SDRAM		RAM: 256MB SDRAM		RAM: 512MB DDR		RAM: 512MB DDR	
IDE controller	Ultra DMA		Ultra DMA		Ultra DMA		Ultra DMA		Ultra DMA	
GPS receiver	20-ch ITtrax 300 (Optional)		-		-		-		-	
Serial ports	1x RS-232 1x RS-232/422/485		1x RS-232 1x RS-232/422/485		1x RS-232 1x RS-232/422/485		1x RS-232 1x RS-232/422/485		1x RS-232 1x RS-232/422/485	
USB ports	8x USB 2.0		4x USB 1.1 4x USB 2.0		4x USB 1.1		8x USB 2.0		4x USB 2.0	
Ethernet ports	1x Fast Ethernet		1x Fast Ethernet		1x Gigabit Ethernet 1x Fast Ethernet		1x Fast Ethernet		1x Gigabit Ethernet 1x Fast Ethernet	
Video controllers	1x Analog VGA 1x Digital LVDS		1x Analog VGA 1x Digital LVDS		1x Analog VGA 1x Digital LVDS		1x Analog VGA 1x Digital LVDS		1x Analog VGA 1x Digital LVDS	
Audio	Intel High Definition		AC97		AC97		AC97		AC97	
Other interfaces	PCIe Mini Card Socket SDIO Socket TPM SMBUS GPIO x 8 Power Connector Keyboard & mouse		Power Connector Keyboard & mouse		Power Connector Keyboard & mouse		Power Connector Keyboard & mouse		Power Connector Keyboard & mouse	
Nominal Power Supply	5.0 V DC		5.0 V DC		5.0 V DC		5.0 V DC		5.0 V DC	
Typical Power Consumption	7 W	7.5 W	8.0 W	13.0 W	8.0 W	13.0 W	9.5 W	14.5 W	9.5 W	18.5 W
Temperature Range	-40 to +85 °C	0 - +70 °C	0 to +50 °C (commercial) -40 to +85 °C (Industrial)		0 to +50 °C (commercial) -40 to +85 °C (Industrial)		0 to +60 °C (commercial) -40 to +85 °C (Industrial)		0 to +60 °C (commercial) -40 to +85 °C (Industrial)	
MTBF (hours) Ground Benign 25 °C	214000		169000	156000	140000	131000	214000	186000	199000	177000

Physical comparison

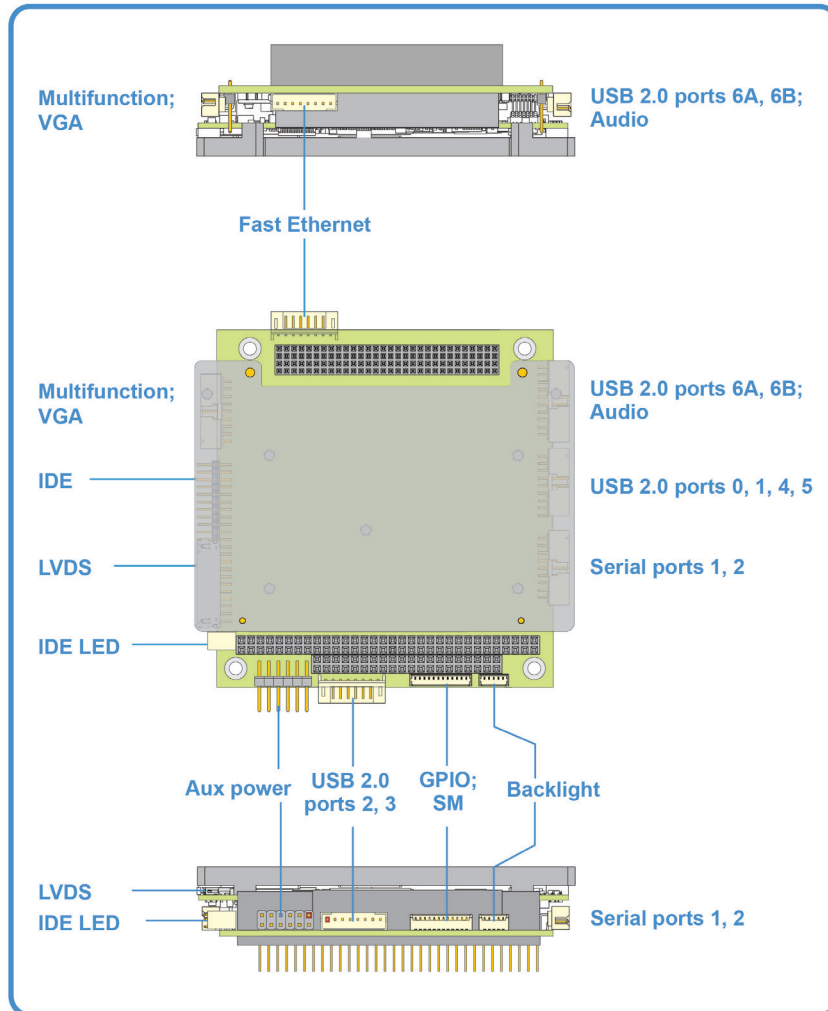
ISIS modules



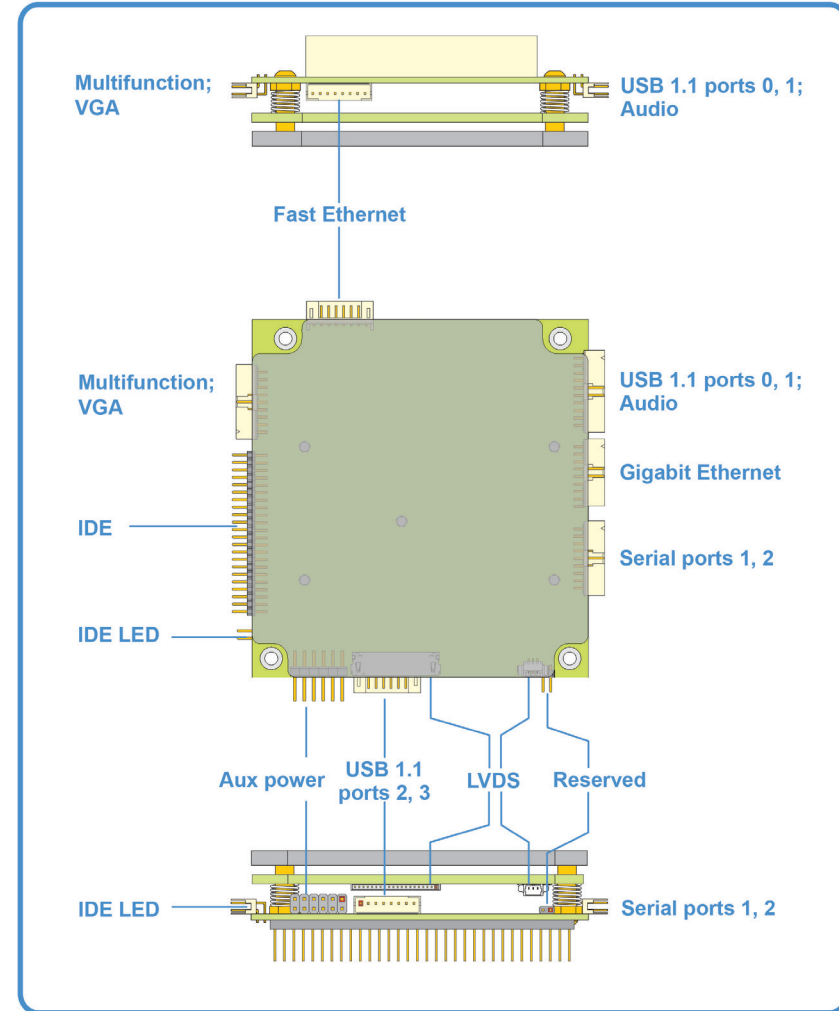
CPU-1452/62 modules



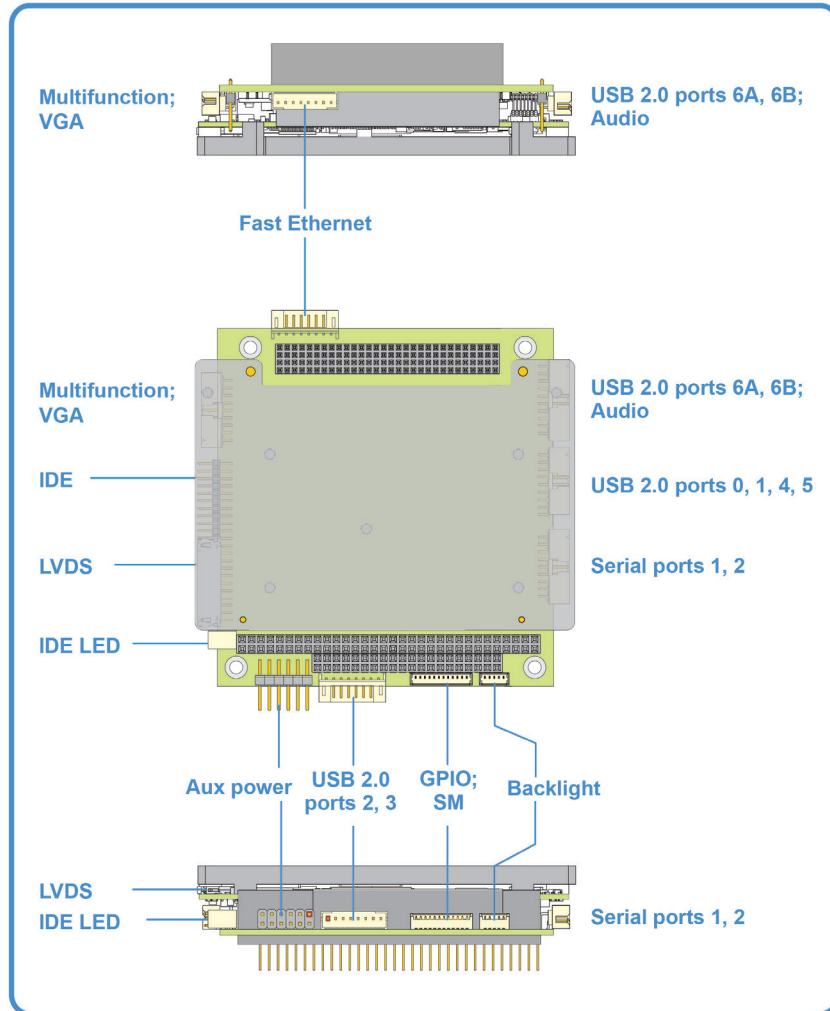
ISIS modules



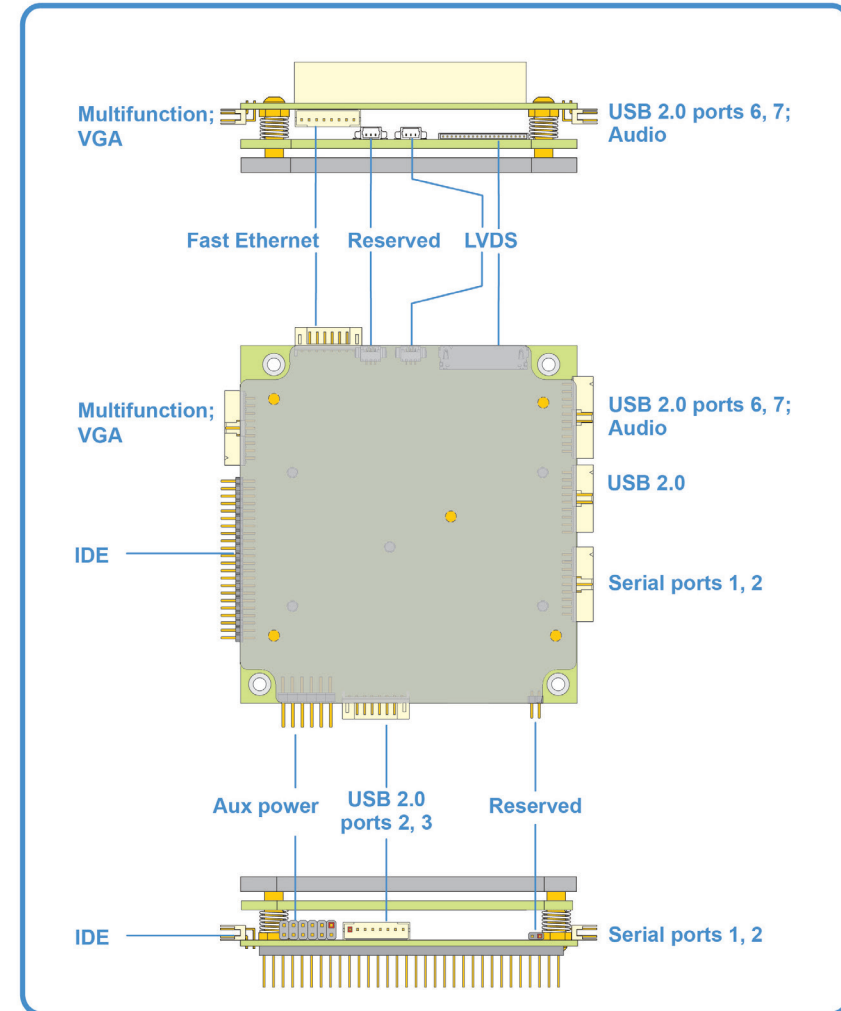
CPU-1454/64 modules



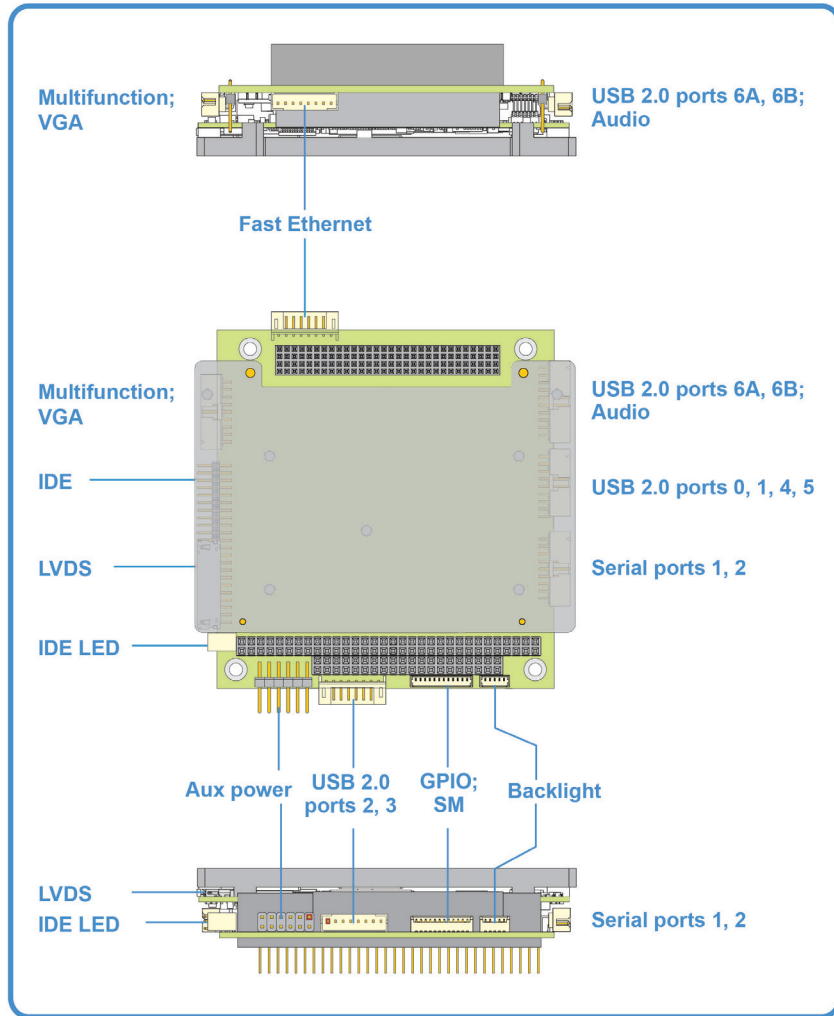
ISIS modules



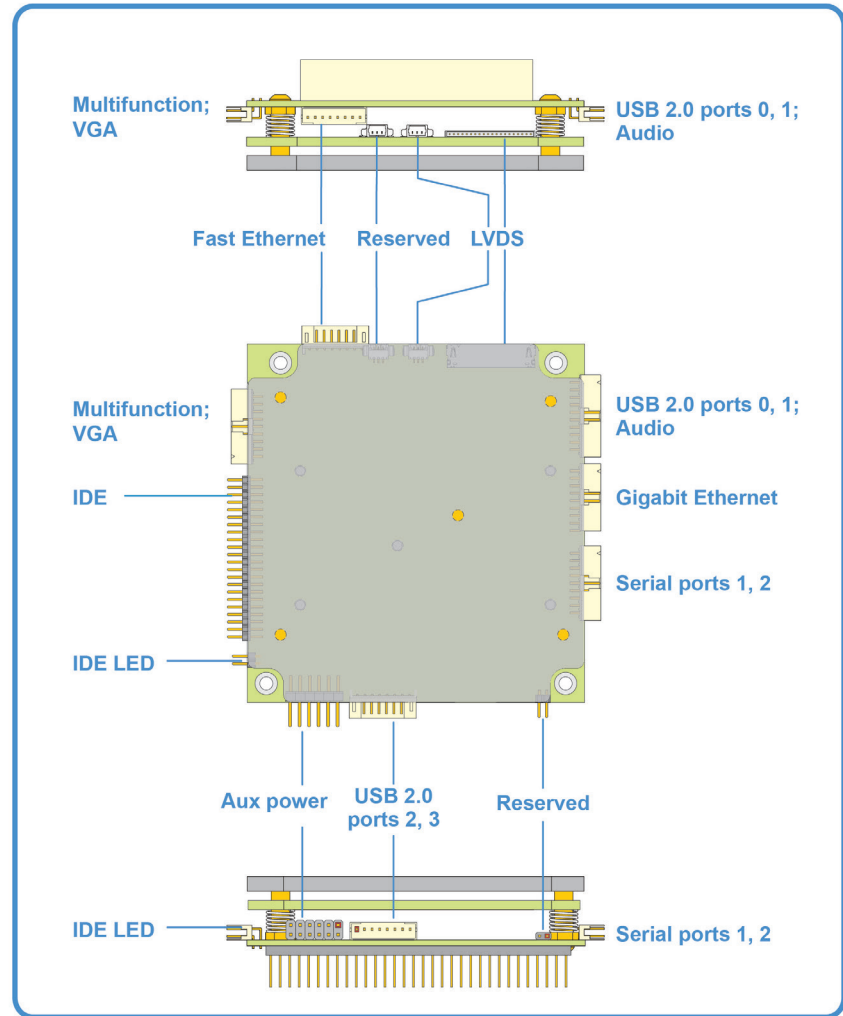
CPU-1472/82 modules



ISIS modules



CPU-1474/84 modules



Benchmarks

Passmark Tests		ISIS 1.3GHz (Atom 1.33 GHz)	ISIS 1.6GHz (Atom 1.66 GHz)	CPU-1452/4 (Celeron 400 MHz)	CPU-1462/4 (Pentium III 800 MHz)	CPU-1472/4 (Celeron M 1 GHz)	CPU-1482/4 (Pentium M 1.4 GHz)
CPU	Integer Math	23.1	23.1	11.0	21.1	35.3	49.5
	Floating Point Math	100.6	100.5	46.4	93.1	120.0	168.0
	Find Prime Numbers	72.3	72.5	3.6	7.2	115.0	161.2
	Multimedia Instructions	1.2	1.2	0.0	0.0	0.9	1.3
	Compression	766.9	772.3	325.3	654.2	389.7	545.7
	Encryption	2.7	2.7	2.2	4.2	1.5	2.2
	Physics	17.2	17.1	0.0	0.0	18.9	30.4
	String Sorting	415.8	412.8	231.6	416.9	323.9	432.8
Graphics 2D	Solid Vectors	2.6	2.6	0.0	0.0	1.2	4.8
	Transparent Vectors	1.3	1.3	0.0	0.0	0.6	1.6
	Complex Vectors	35.6	36.1	0.0	0.0	56.6	85.6
	Fonts and Text	19.2	19.6	23.0	39.4	14.8	53.2
	Windows Interface	14.0	13.8	40.1	70.4	11.6	72.5
	Image Filters	89.4	89.5	0.0	0.0	42.6	145.4
	Image Rendering	84.7	84.8	0.0	0.0	88.2	134.1
Graphics 3D	Simple	48.8	45.5	61.9	67.0	68.5	58.8
	Medium	7.3	7.2	0.0	0.0	17.5	16.7
	Complex	1.0	1.0	0.0	0.0	2.9	3.2
Memory	Allocate Small Block	882.7	884.0	278.7	564.9	712.5	1019.8
	Read Cached	735.4	736.8	268.2	539.0	689.2	997.1
	Read Uncached	650.8	654.4	238.0	350.6	654.6	850.2
	Write	640.8	613.6	149.5	391.6	419.9	435.1
	Large RAM	109.4	110.5	6.2	8.8	44.9	43.2
Disk	Sequential Read	20.4	20.4	22.6	22.6	25.7	25.7
	Sequential Write	20.2	20.1	22.3	21.8	24.3	24.9
	Random Seek + RW	1.4	1.4	1.3	1.4	1.5	1.5
Summary	CPU Mark	328.0	327.6	74.0	145.2	291.7	411.1
	2D Graphics Mark	178.5	179.0	72.5	104.8	108.6	314.9
	Memory Mark	210.8	209.3	69.5	120.7	164.1	212.8
	Disk Mark	151.7	151.4	167.3	165.9	186.0	188.1
	3D Graphics Mark	25.9	24.7	0.0	0.0	46.8	43.8
	PassMark Rating	171.7	168.5	67.1	120.9	181.6	234.2



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