

# Vortex86 Family Specification

Version:3.0

	Vortex86EX	Vortex86DX3	Vortex86EX2
Frequency	400 MHz (typ.)	1000 MHz (typ.)	600 MHz (typ.)
Core	Single	Dual	Two (600+400 MHz)
FPU	Yes	Yes	Yes
L1 Cache	16KB C/D Cache	32KB C/D Cache	16KB C/D Cache
L2 Cache	128KB	512KB	128KB
DRAM Bus	16-bit DDR3 1GB Max.	32-bit DDR3 2GB Max.	16-bit DDR3 2GB Max.
DRAM ECC	No	No	2-bit ECC
GPU	N/A	2D Engine,VGA/LCD	N/A (note)
LCD Controller	N/A	N/A	Yes
HD-Audio	Yes	Yes	Yes
WatchDog	1	2	2
PCIe Bus	PCIe x 1	PCIe x 2	PCIe x 2
ISA Bus	Yes	Yes	Yes
SPI Bus	1	2	2
USB	Host x 2, Device x 1	Host x 4	Host x 1, Host/Device x 1
Serial Port	10 max.	9 max.	10 max.
GPIO Port	80 bit max.	88 bit max.	128 bit max.
Ethernet	1	1	2
Storage	SATA + SD/MMC	SATA + IDE/SD/MMC	SD/MMC x 3
Parallel Port	1	1	1
CAN	1	N/A	2
I2C	1	2	2
ADC	11 bit x 8 chan.	11 bit x 8 chan.	12 bit x 16 chan.
Package Size	16 x 16 mm	31 x 31 mm	19 x 19 mm
Package TYPE	288 pins Ball BGA	720 pins Ball BGA	441 pins Ball BGA
Ambient Temp	-40 ~ +85°C	-40 ~ +85°C	-40 ~ +85°C
Power / Watt	1.8	6.5	2.1
Performance / DMIPS	740	3796	1862 (Master:1117 + Slave 745)
IO Access Time / μs	1.2	1.3	0.17

IO Access Time : The cycle time for one read or write access time on GPIO, the unit is 1s (microsecond).

(note) : Vortex86VGA PCIe Display Controller (Vx86VGA-9160) is suggested for the applications which need VGA or LCD.

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DMP Electronics INC

# VORTEX86 EX2

A TWO-BRAIN SoC



[www.vortex86.com](http://www.vortex86.com)

The **Vortex86EX2** is a new generation asymmetric two cores CPU which utilizes both cores simultaneously boot and run different operating systems without affecting each other. The CPU supports Windows, Linux, DOS or various real-time OS for industrial and embedded applications.

### Unique Asymmetric Computing

- The Master/Slave Cores are able to execute different Operating Systems at the same time without affecting each other, including failures in single core.
- Memory and I/O are able to be assigned and configured to Master or Slave cores

Compared to Vortex86EX, the Vortex86EX2 has the following advantages:

### Better Performance

- Master:600 MHz ,Slave:400 MHz.
- Enhanced FPU for Complex Calculations.
- Accurate Real-Time Performance through Shorter Interrupt Response Time and Faster I/O Access Speed.

### Complete Smart I/O Support

- 128 GPIO bits
- 16 ADC channels with 12-bit resolution
- Dual LAN, Dual CAN, Dual SPI, Dual I2C
- 3 Motion Control Modules
- DMA on GPIO, ADC and SPI.
- LCD Controller Support
- ISA, PCI and PCIe Buses Support
- UART Baud Rate up to 20 Mbps

### Vortex86EX2 Block Diagram

