

## DPD2

The DPD2 is a 320 MB/sec 2eSST VMEbus compatible platform which supports dual Intel® Xeon ULV processors. The DPD2 also supports an optional on-board Xilinx Virtex 4 FPGA. The DPD2 takes advantage of the Core-Duo's low 15 W power consumption as a rugged Single Board Computer (SBC). It is optionally available as an IEEE 1101.2-compliant, conduction-cooled VMEbus module with wedge locks and a full-board heat sink for high shock/vibration environments and temperature extremes.

The E7520 Memory Controller Hub (MCH) and 6300ESB I/O Controller Hub (ICH) chipset supports PCI-X and PCIe expansion, USB 2.0, Serial ATA (SATA) and GPIO. One of the two Gb Ethernet ports, two USB 2.0 ports are accessible from the front panel in addition to optional front panel VGA and one PMC bezel. On-board connector supports bootable 1.8" SATA drives. Two Gb Ethernet ports are routed to the backplane, with one having alternative routing to front panel. Two SATA ports, VGA video, four COM ports, GPIO, and one more USB 2.0 port are routed to the backplane. One USB 2.0 port supports on-board USB Flash drive. One PMC/XMC site is provided for additional I/O expansion. Conventional PC I/O is accessible with industry-standard connectors on optional rear I/O modules.

### Core Duo Processor

Up to two Dual-core Xeon™ ULV (@ 1.66GHz processors, in 65nm technology, with dual processing support allowing up to 4 execution threads.

On each processor: 32KB Instruction L1 cache per core, 32KB write-back data cache per core, 2MB ECC protected L2 cache shared between the two cores FSB @667MHz

### E7520 Memory Controller Hub

Intel's E7520, with two-channel memory controller and PCIe bus lanes, flexibly divided to x1, x4, x8 and x16 ports

### 6300ESB I/O Controller Hub

PCI-X 64/66 port, PCI 32/33 port, four USB 2.0 ports, two SATA-150 ports, two COM ports, real-time clock, watchdog timer, legacy interrupt controller

**Super I/O**

LPC47N227 Super I/O connected to the LPC bus from ICH provides two COM ports, GPIO, from P2 or from optional rear Transition module

**DRAM**

2 or 4 GBytes of DDR2-400 memory  
BGA memory for high shock/vibration immunity  
Two banks that are each 64 bits wide with 8 bits for ECC support **VMEbus**  
Tundra Tsi148 bridge controller supports fast data throughput using 2eSST while also maintaining backwards compatibility with older standards such as VME64 and VME32. The 2eSST protocol is based on synchronous data transfer and thus doubles the theoretical VME transaction bandwidth to up to 320 MB/s.

**PMC Expansion**

PMC site compatible with PCI-X up to 133 MHz/64-bit  
Site also supports XMC modules with x8 PCIexpress  
Access to PMC sites from front (air-cooled version only) or rear

**SATA Drive Mezzanine**

Optional SATA drive option in place of PMC/XMC  
1.8" SATA drives supported

**USB Flash**

On-board USB Flash option  
1, 2 or 4 GB low profile Z-U130

**Ethernet**

Two 10/100/1000 BaseTX  
82571 x4 PCIexpress  
One port selectable between FP or P0  
Second port routed to P0 (VITA 31.1 compatible)

**Graphics**

PCIexpress x8  
AMD M72 graphics controller  
128 MB DDR3 on-chip  
2048 x 1536 @ 85 Hz  
VGA1 routed to FP or P2  
VGA2 routed to P0

**Xilinx Virtex 4 FPGA**

Optional XC4VFX60 provides high-performance, full-featured solution for embedded platform applications  
Provides flexible I/O configuration and backplane interface options including Rapid I/O

**BIOS**

Phoenix flash-based system BIOS with a variety of boot options, including CD-ROM and PXE over Ethernet  
Customized versions available upon request

**RTM**

XPD2 PTB rear transition module  
Connectors for PMC/XMC and industry standard connectors for all I/O routed to backplane

**Front Panel I/O**

Two USB 2.0 connectors  
VGA connector  
One RJ-45 10/100/100 BaseTX

**Rear I/O**P0 I/O includes:

Two 10/100/1000 BaseTX Ethernet compatible with VITA 31.1 (only one if one port routed to FP)  
VGA2  
FPGA interface  
Two SATA ports

P2 I/O includes:

VGA1(if not routed to FP)  
PMC/XMC I/O  
Four COM ports (one with full handshaking)  
14 GPIO lines  
One SATA port  
One USB 2.0 port or three USB 2.0 ports if no FP USB

**Port 80 display**

7-segment display for BIOS POST data

**XPD2PTB Interfaces**

Rear I/O interface board (RTM) provides industry standard connectors for all rear I/O

**Operating temperature**

The DPD/RPD has an operating temperature range of 0°/70° C  
Extended temperature versions are available

**Rugged/Conduction-cooled**

RPD2 is a conduction-cooled version of the DPD2  
Wedge-loks provide high shock/vibration immunity per MIL-STD-810F  
Convection-cooled and conduction-cooled versions have conformal coating as an option  
Extended temperature versions available

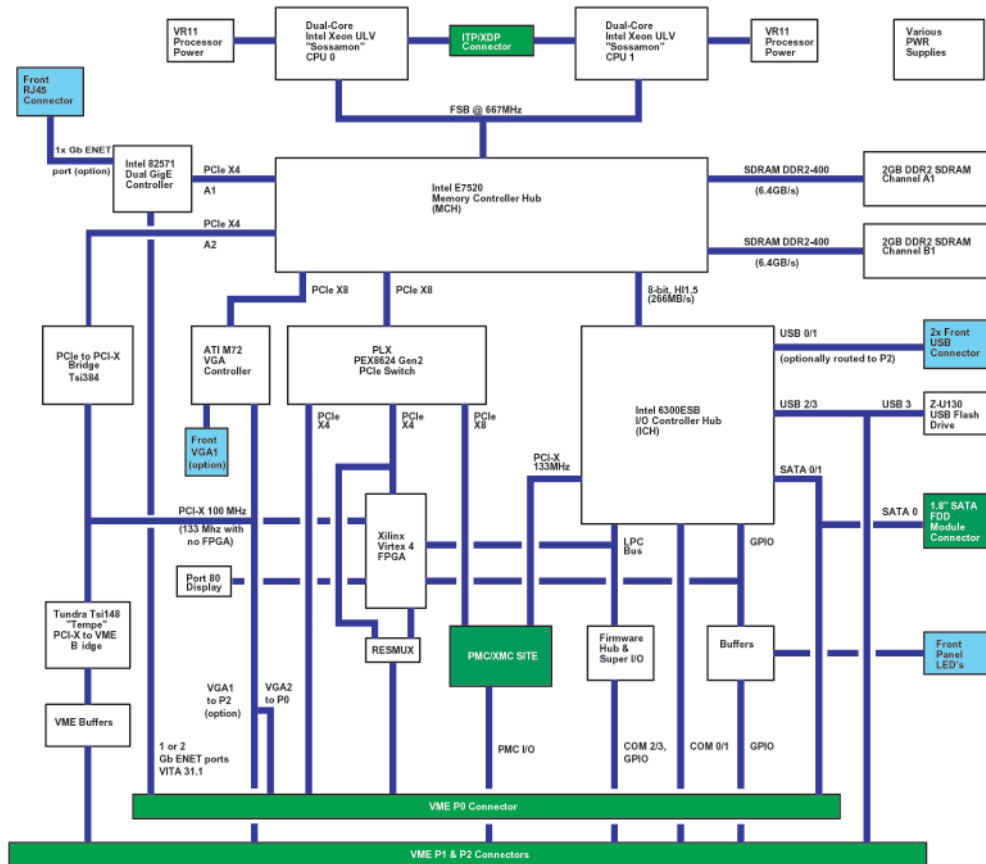


DPD2 I/O Routing			
I/O	Front Panel	P0	P2
SVGA	1(option)	1	1 (option)
Serial ATA		1	
10/100/1000BaseTX	1(option)	1 + 1(option)	
Full Driven RS-232 Port			1
Two-wire Driven RS-232			3
USB 2.0	2 (option)		1+2 (option)
PMC/XMC	1		1
FPGA		1	
Driven GPIO			14

#### Environmental Specification

Temperature			
	Operating	0°/71°C Special versions available for extended temperature operation	Clock throttling can be implemented for wider temperature ranges
	Storage	-55°C to 125°C	
Humidity			
	Operating	0 to 95% non-condensing	± 4% relative humidity, per MIL-STD-810F
	Storage	0 to 100% non-condensing	
Altitude			
		Unlimited	Air cooled cards must have adequate cooling
Vibration			
	Sine	10 g peak 15-2 kHz	All levels based on a sweep duration of ten minutes per axis, each of three mutually perpendicular axes. Qualification testing is displacement limited below 44 Hz.
	Random	0.1 g <sup>2</sup> /Hz 15-2 kHz (14.1 grms)	60 minutes per axis each of three mutually perpendicular axes.
	Shock	40 g peak	Three hits per direction per axis, ½ sine + terminal peak sawtooth, 11 ms (total 36 hits).

## DPD2 Block Diagram



### Ordering Information:

Part#	Description
DPD21xSSx	VME 2eSST, VITA 31.1 compatible, single board computer populated with 1 Dual-core Xeon™ ULV (@ 1.66GHz, 4 GB DDR2-400 ECC DRAM, with no USB Flash installed, with no FPGA installed
DPD22xSSx	VME 2eSST, VITA 31.1 compatible, single board computer populated with 2 Dual-core Xeon™ ULV (@ 1.66GHz, 4 GB DDR2-400 ECC DRAM, with no USB Flash installed, with no FPGA installed
RPD2xxxxx	Conduction cooled version
xxxxxUxxx	4 GB USB Flash for DPD2
xxxxxVxxx	8 GB USB Flash for DPD2
xxxxxWxxx	16 GB USB Flash for DPD2
xxxxxxxxF	With XC4VFX60 FPGA installed
XPD2PTB	Rear transition module with industry standard connectors for all I/O routed to backplane

Extended temperature versions and conformal coating are also available