

Power and Flexibility

The Orion VPX7705 Single Board Computer (SBC) is the industry's most flexible, rugged, high-performance Dual Core SBC in today's embedded marketplace.

By incorporating the power of the Freescale MPC8640/1D™ and the unparalleled complement of I/O via the customer configurable **"Personality Modules"**, we can adapt to practically any Military, Industrial or Commercial application.



Available in 4 levels of ruggedization levels from commercial temperature air-cooled (0.8" pitch) to extended temperature REDI (Vita 48.2, 0.85" pitch).



With two VPX 4-lane PCI express fabric ports and an 8-lane PCI express XMC slot, the VPX7705 design has streamlined high-speed board-to-board communication.

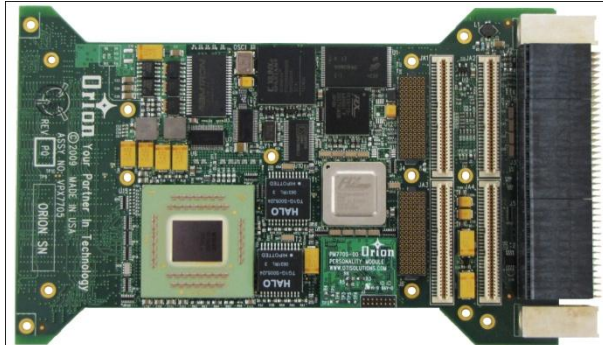
The VPX7705's 4 Gb Ethernet ports, 3 serial ports, 3 USB 2.0, 8 general purpose IO and PMC P14 or XMC P16 IO are all accessible through VPX connectors P1 and P2.



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VPX7705

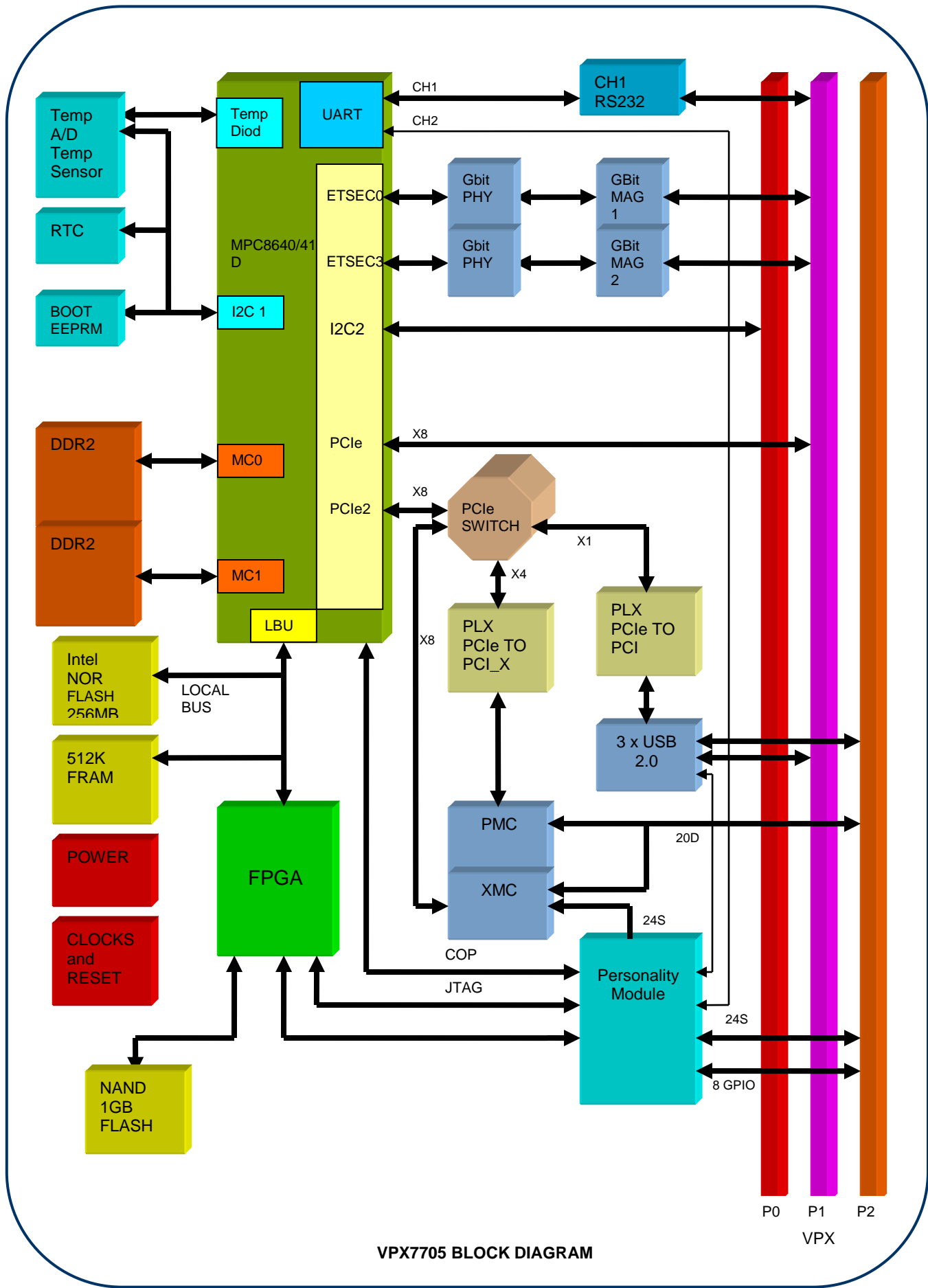
Dual-Core REDI (Vita 48) 3U VPX MPC8640/41D SBC Module



Features:

- ◆ FreeScale Dual Core MPC8640/1D up to 1.5 GHz
- ◆ 64 K L1 data and instruction caches
- ◆ 1 MB internal L2 Cache per Core
- ◆ Extended temperature & rugged **REDI (Vita 48.2)**
- ◆ On-board temperature monitoring
- ◆ 30W typical power dissipation
- ◆ 2 GB of soldered DDR2 SDRAM with ECC
- ◆ 256 MB of on-board user NOR Flash
- ◆ 1 GB of on-board NAND Flash
- ◆ 512 KB AutoStore FRAM
- ◆ 64-bit/133MHz PCI-X PMC slot (**PrPMC**)
- ◆ 8-lane PCIe XMC slot (**Vita 42.3**)
- ◆ 8-lane PCIe port on VPX P1 (**Vita 46.2**)
- ◆ Customer Configurable I/O via Personality Modules
- ◆ **Two** 10/100/1000 Ethernet ports (**Vita 46.9**)
- ◆ **Two** Serial ports, 1x RS232, 2nd configurable
- ◆ **Eight** General purpose I/O, configurable
- ◆ **Three** USB 2.0 ports
- ◆ PMC/XMC front panel & P14/P16 Rear I/O
- ◆ RTC, GP, WD & timers
- ◆ VxWorks, Linux & LynxOS Software Support
- ◆ Orion's Three-Year warranty & support

Orion ...Your partner in technology



VPX7705 BLOCK DIAGRAM

Hardware Specifications

Processor:

Freescale™:	<u>MPC8640D</u>	<u>MPC8641D</u>
Core Type	e600	e600
Max Core Frequency	1.0MHz	1.5GHz
Inst. Cache:	64KB	64KB
Data Cache:	64KB	64KB
L2 Cache:	1MB	1MB
L2 Cache Frequency:	Core Frequency	

Processor Bus:

PowerPC Bus Frequency:	166MHz
PowerPC Bus Width:	A32/D64
Address Parity:	Yes
Data Parity:	Yes

Local PMC Bus:

PMC Bus Frequency:	33/66/33MHz
PMC Bus Width:	64-bit
PMC Signal Voltage:	+3.3V
PCI Compliance:	PCISIG PCI R2.2, PCI-X
PrPMC Support:	Yes. Non-monarch
PMC IO access:	Standard front panel, cPCI J2

Local XMC Bus:

XMC Bus Frequency:	100MHz
XMC Bus Width:	4x Lanes
XMC Signal Voltage:	+3.3V
XMC Compliance:	

Local Device Bus:

Bus Frequency:	Up to 166MHz
Bus Width:	A32/D32
Signal Voltage:	+3.3V

Memory:

DRAM Memory Type:	DDR2 SDRAM
DRAM Memory Size:	512MB or 1GB (per core)
On-Board User FLASH:	128MB or 256MB
I2C Boot EEPROM	64KB

Peripherals:

Two 10/100/1000 Ethernet Ports:

Controller:	Marvell Integrated MAC
Configuration:	Auto Negotiating 10/100/1000
Access:	VPX Connectors P1/P2, Transition module

Dual Serial Ports:

Controller Type:	Integrated on Processor
Access:	VPX Connector P1/P2
Signal levels:	Standard RS232

General Purpose I/O:

Access:	VPX Connectors P1/P2
Configuration:	8 GPIOs
Signal levels:	Configurable by Personality Module

Miscellaneous:

Timers:	◆ Programmable 32/64-bit timers ◆ Watchdog timer
Real Time Clock:	ST Micro MT41T00S Backed Up
Reset:	Power on reset, Push button reset and VPX backplane reset.
COP/JTAG:	Processor COP/JTAG emulator interface
LEDS:	◆ Runtime Status LEDES (front panel) ◆ RJ-45 Ethernet LEDES (front panel)

Specifications:

Power:	<u>MPC8640D</u>	<u>MPC8641D</u>
VPX Typical +3.3v:	TBD	TBD
VPX Maximum +3.3v:	TBD	TBD
VPX Typical +5v:	TBD	TBD
VPX Maximum +5v:	TBD	TBD
Typical Power Dissipation:	TBD	TBD
Max Power Dissipation:	TBD	TBD

Environmental:

Operating Temperature:	0° to 70°C (commercial) -40° to 85°C (Conduction, measured at the rail)
Storage Temperature:	-40° to 85°C
Relative Humidity:	5% to 95% non-condensing
Board Size:	Single-slot 3U VPX 160mm x 100mm
Weight:	TBD oz, TBD grams (with conduction cooled heat spreader)



Ordering Information

Commercial Temp. Air Cooled

1GHz Freescale Dual Core 8640D

256MB DDR2 (per core), 128MB NOR	VPX7705-00
512MB DDR2 (per core), 128MB NOR	VPX7705-01
1GB DDR2 (per core), 128MB NOR	VPX7705-02

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-03
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-04
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-05

1.5GHz Freescale Dual Core 8641D

256MB DDR2 (per core), 128MB NOR	VPX7705-10
512MB DDR2 (per core), 128MB NOR	VPX7705-11
1GB DDR2 (per core), 128MB NOR	VPX7705-12

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-13
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-14
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-15

Extended Temp. Air Cooled

1GHz Freescale Dual Core 8640D

256MB DDR2 (per core), 128MB NOR	VPX7705-20
512MB DDR2 (per core), 128MB NOR	VPX7705-21
1GB DDR2 (per core), 128MB NOR	VPX7705-22

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-23
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-24
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-25

1.5GHz Freescale Dual Core 8641D

256MB DDR2 (per core), 128MB NOR	VPX7705-30
512MB DDR2 (per core), 128MB NOR	VPX7705-31
1GB DDR2 (per core), 128MB NOR	VPX7705-32

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-33
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-34
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-35

Ext. Temp. Conduction Cooled

1GHz Freescale Dual Core 8640D

256MB DDR2 (per core), 128MB NOR	VPX7705-40
512MB DDR2 (per core), 128MB NOR	VPX7705-41
1GB DDR2 (per core), 128MB NOR	VPX7705-42

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-43
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-44
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-45

1.5GHz Freescale Dual Core 8641D

256MB DDR2 (per core), 128MB NOR	VPX7705-50
512MB DDR2 (per core), 128MB NOR	VPX7705-51
1GB DDR2 (per core), 128MB NOR	VPX7705-52

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-53
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-54
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-55

Ext. Temp. REDI (Vita 48.2)

1GHz Freescale Dual Core 8640D

256MB DDR2 (per core), 128MB NOR	VPX7705-60
512MB DDR2 (per core), 128MB NOR	VPX7705-61
1GB DDR2 (per core), 128MB NOR	VPX7705-62

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-63
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-64
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-65

1.5GHz Freescale Dual Core 8641D

256MB DDR2 (per core), 128MB NOR	VPX7705-70
512MB DDR2 (per core), 128MB NOR	VPX7705-71
1GB DDR2 (per core), 128MB NOR	VPX7705-72

256MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-73
512MB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-74
1GB DDR2 (per core), 256MB NOR, 1GB NAND	VPX7705-75

At Orion Technologies, our goal is to serve you, our customers. We are dedicated to finding high-quality, cost-effective solutions to meet your application. We will modify any Orion Technologies product or will design a custom solution to fill your requirements.

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