3DR COMPUTING

Windom

Xilinx Virtex 6 Power PC

Model Number: 3DR-V6-460SX

COLORADO ENGINEERING, Inc.

3D COMPUTING OVERVIEW

3DR computing technology brings together high performance computing, ease of programmability, low-cost, and commercial I/O flexibility in a modular, open systems and standards architecture to realize uniquely scalable and widely configurable, high speed embedded processing solutions for the development of radar, EW, SIGINT, and communication systems.

3DR computing possesses the unique ability to morph in size, shape, and processing capacity. This flexibility provides a low cost, standard solution capable of rapidly conforming to the vastly different power, space, and environmental requirements found aboard any surface, sub-surface, or airborne system or platform.

FEATURES

Power PC

- PPC-460SX (800MHz to 1.2 GHz)
- Up to 4GB DDR2 memory at 800MHz
- 64MB boot flash
- 512 MB NAND flash

FPGA

- Xilinx Virtex 6 (XC6VLX240T)
- DDR2 memory
- Up to 533MHz supporting sizes
- Up to 4GB at various speeds

3D Connectivity Via

- PCIe
- LVDS
- SerDes
- 39 GB/sec of bandwidth per module

BENEFITS

- Employs onboard current limiting circuitry and fused temperature monitoring chip
- Additional I/O support available via dual gigabit Ethernet ports, JTAG, and standard RS-232 connections
- Dual gigabit Ethernet ports support TCP/IP
- Power supplied via standard 4-pin power connector

APPLICATIONS

- General purpose / digital Signal processing
- Radar receiver / exciter
- Digital array processing and beamforming
- Electronic warfare/Attack systems
- SIGINT (ELINT, COMINT) systems
- Digital image processing
- Remote sensing

PRODUCT DESCRIPTION

At the heart of the 3DR computing family architecture is the 3DR-V6-460SX Central Processing Module. This module consists of a Power PC (PPC-460SX) general purpose processor, a Xilinx (Virtex 6) FPGA, onboard DDR2 memory modules, and a combination of PCIe, LVDS, and SERDES commercially available I/O modules. The processing modules also provide dual Gigabit Ethernet ports, JTAG, and RS-232. The variety of available standard interfaces promotes network connectivity with a wide range of third party systems and subsystem. This includes commercially available switches and routers and promotes the integration of a system-of-systems in a net-centric environment.

The 3DR computing standard micro-controller architecture is interfaced through the I2C bus to provide FPGA and PPC temperature, voltage, and current monitoring for automatic shut-down during critical over heat and/or voltage conditions. As with all 3DR computing modules, the 3DR-V6-460SX supports three dimensional connectivity, allowing the user to stack and/or tile modules to address a wide variety of processing, I/O, size, weight, and power requirements.

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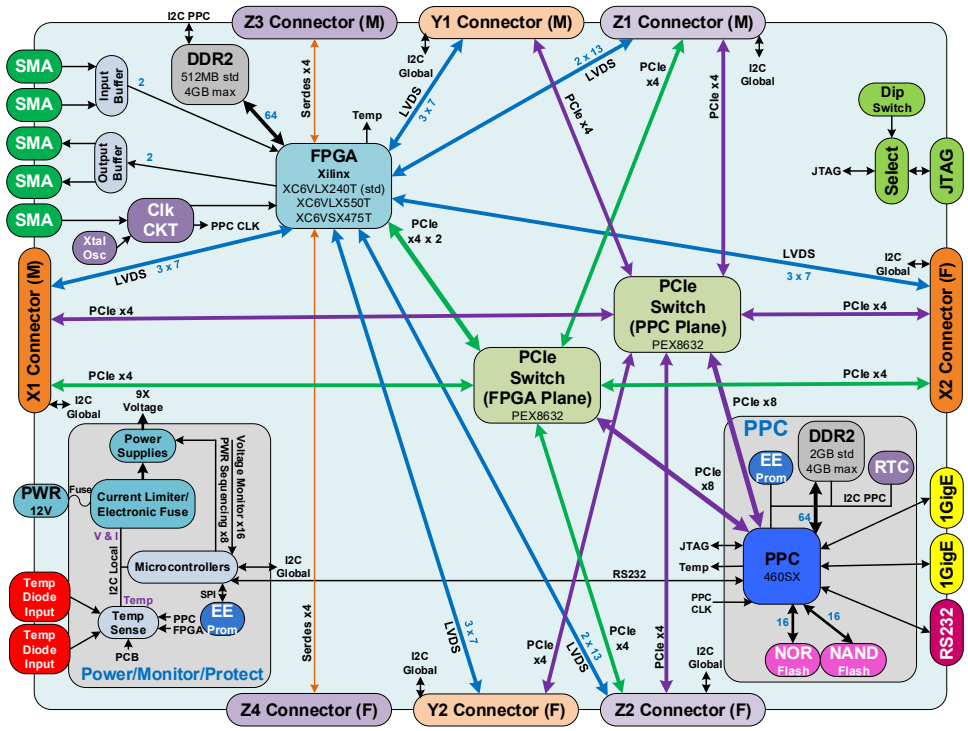
BLOCK DIAGRAM



CONFIGURATIONS

Model Number	Configuration
3DR-V6-460SX-C	Commercial temp 0°C-50°C

*Please contact CEI for extended temperature range options

SPECIFICATIONS

Microcontroller Interface

- Dual microcontrollers programmable over SPI bus
- Controls power-on and power-down sequencing
- Monitors voltages and reports faults over I2C bus
- Monitors current, e-fuse shut-down, and reports over I2C bus
- Monitors board temperature over I2C bus (external sensor available)
- On board EEPROM for data storage and logging (write protect available)
- FPGAs and CPLDs programmable over JTAG Bus (for applicable modules with FPGAs and CPLDs)
- Two RS-232 debug ports

FPGA

- Xilinx, Virtex 6 XC6VLX240T
- LX365T & LX550T available in 1759 package
- JTAG programmable
- 2 NOR flash configuration/user programmable memories
- Master BPI configuration
- Write protect available

External Interfaces

- Two 1G Ethernet ports
- Ethernet hardware acceleration —> TCP/IP built into PPC with support for jumbo frames
- Ethernet performance —> 840 Mb/s (with HW acceleration)
- Gen1 or Gen2 PCIe
- X1, X2 connectors —> PCIe (FPGA/PPC); LVDS (FPGA)
- Y1, Y2 connectors—> PCIe (PPC); LVDS (FPGA)
- Z1, Z1 connectors—> PCIe (FPGA/PPC); LVDS (FPGA)
- Z3, Z4 connectors—>SERDES (FPGA)
- USB 2.0
- RS-232

Power

- Power Consumption: 12V @ 15.5 Amps (Subject to FPGA Loading)
- Supply Options: 12V Power Cable
- Additional Power Features: e-fuse/continuous power monitoring

Physical

- Dimensions: 6.25”L x 6.25”W
- Dimensions including connectors: 6.668”L x 6.668” W
- Distance Between Boards (Stacked; Board-to-Board) : 1.1”
- Weight: 11oz.

Environmental

- Operating temperature : 0° to 50°C (Commercial Configuration)
- Storage Temperature : (est) -55°C to 100°C, Cooling AirFlow Recommended, FPGA Application Dependent (Heat Sink Mounts Available)

Processor

- AMCC PPC460SX (1.0 GHz)
- DDR2 —> 2GB (up to 4GB) at 800MHz
- PPC Boot Flash —> 64MB
- NAND Flash —> 512MB
- PPC Local Bus —> up to 100MHz at 32 bits

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