

# V1141

## Quad-Port PMC/XMC FPGA Card

### Benefits

Fibre Channel support with hardware acceleration for RDMA, ASM, and AV

Ethernet support with upper layer protocol off-load engines, multicast, and broadcast

Modes available for switch functions, data recording, and port replicating

Built-in DMA engines automate data transfer to and from host memory

Advanced APIs that support multi-core and multi-processor architectures

### Features

Four SFP+ ports accommodate fibre or copper connectors

Microsemi SmartFusion®2 M2S150 FPGA

PCIe Gen2 x 4 or 64 bit PCI

IRIG time synchronization with  $\mu$ Sec resolution

Thermal sensors for monitoring card temperature

Robust FPGA development framework

Available in air and conduction-cooled XMC or PMC form factors

Optimized Windows, VxWork, and Linux drivers and libraries

Fibre Channel Point-To-Point, Switched Fabric, and Arbitrated Loop support

### Overview

New Wave DV's V1141, available in either PMC or XMC form factor, is designed to provide robust network performance and control for industrial and military applications.

The V1141 is the lowest power and most secure programmable networking card available. This PMC/XMC solution is designed to provide real time high-bandwidth network interfaces in a secure and lower power architecture.

The V1141 card features the Microsemi SmartFusion2 M2S150 SoC FPGA and includes on-board memory to assist hardware acceleration of networking stacks.

The V1141 features four SFP+ interfaces and supports Ethernet (UDP, ARP, ICMP) and Fibre Channel (ASM, RDMA, AV) at rates up to 5 Gbps per port. These offload engines have been used in the F35 and F18 programs.

The V1141 is FPGA-based, so enhanced features and custom options can be incorporated for your specific application needs. New Wave DV brings an experienced team of FPGA engineers to all customization projects.

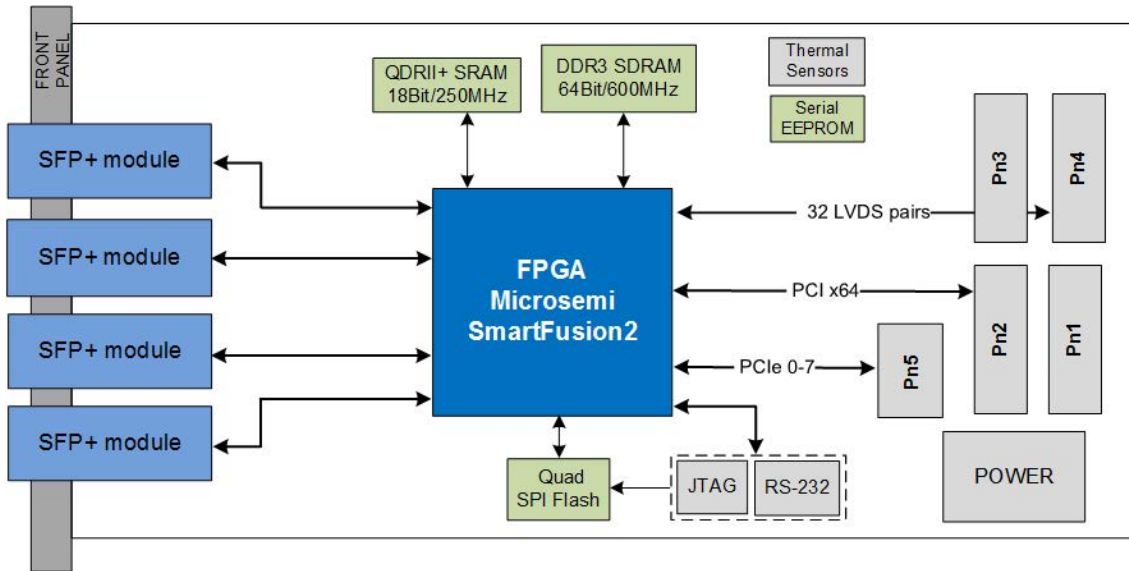
Software drivers are available for Windows, VxWorks, and Linux and come standard with the V1141 card.

With a variety of host configuration options and drivers available, the V1141 is the perfect solution for your networking needs.



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> V1141 PMC/XMC Block Diagram

### Simplified Programmability Framework

The V1141 ships with the expressXG Development Framework, a fully integrated and flexible toolset that provides the infrastructure necessary to ensure rapid deployment of applications. The framework abstracts the details of Ethernet/Fibre Channel protocols and interfaces, memory controllers and host fabric interfaces, thereby reducing the development effort and schedule for designers to implement custom solutions. High performance software libraries and drivers ensure that the card is running “out of the box.”

### Optional Offload Engine

The V1141 optionally has built-in support for Fibre Channel and Ethernet upper layer protocols. When used as a gateway, the V1141 supports PCI Express over the Pn5 connector for processor communication and comes with high level APIs for control and data transfer resulting in a simplified programming model.

### Multi-Processor Multi-Core Support

The V1141 is uniquely suited to system architectures involving multiple processing cards on a common switched data plane. Specifically, the V1141 supports shared access from multiple host processors, enabling it to function as a cost effective, high-performance gateway. This feature enables a single high-speed pipe to carry multiple virtual channels in systems that need to spread or load balance sensor data across processor farms.

### Operation Customization

The V1141 is an FPGA-based network card that can be customized to fit your requirements. New Wave provides access to the FPGA for customers to customize, however New Wave can also modify existing cores or develop new cores for your applications. If you have specific networking requirements, New Wave can help you accomplish your goals.

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### Complete Product Support Program

New Wave DV prides itself on its excellent customer support, a fact that is echoed by our customers. New Wave DV provides industry standard warranty on its products, but it is the human factor that makes our support so valuable to our customers. Our team takes the time and effort to ensure that the customer experience with our products is a positive one.

### Our Commitment

New Wave DV is committed to providing the latest innovations in technology, architectures, and techniques to keep our customers one step ahead of the rest. Our products, complete with expressXG Development Framework, are intended to offer our customers an entirely unique out-of-the-box experience.

### Ordering Information

400-01141-03-01: V1141 PMC Network Card, Microsemi MS2150T FPGA, 2x4Gbit DDR3, includes PCI Fibre Channel ASM Offload Engine

400-01141-02-02: V1141 XMC Network Card, Microsemi MS2150T FPGA, 2x4Gbit DDR3, includes PCIe Fibre Channel ASM Offload Engine

400-01141-02-12 V1141 XMC Network Card, 3 front panel ports, Microsemi MS2150T FPGA, 2x4Gbit DDR3, Includes PCIe Fibre Channel Arbitrated Loop ASM offload engine

400-01141-03-03: V1141 PMC Network Card, Microsemi MS2150T FPGA, 2x4Gbit DDR3, includes PCI Fibre Channel RDMA Offload Engine

400-01141-02-04: V1141 XMC Network Card, Microsemi MS2150T FPGA, 2x4Gbit DDR3, includes PCIe Fibre Channel RDMA Offload Engine

400-01141-03-07: V1141 PMC Network Card, Microsemi MS2150T FPGA, 2x4Gbit DDR3, includes PCI Fibre Channel Port Replicator Core

400-01141-02-08: V1141 XMC Network Card, Microsemi MS2150T FPGA, 2x4Gbit DDR3, includes PCIe Fibre Channel Port Replicator Core

400-01141-03-09: V1141 PMC Network Card, Microsemi MS2150T FPGA, 2x4Gbit DDR3, includes PCI Fibre Channel Switch Core

Other product configurations are available. Please contact us.

### Technical Specifications

#### NETWORK INTERFACE

Four SFP+ ports

#### ETHERNET PROTOCOLS

TCP, UDP, ARP, ICMP, Multicast, Broadcast

#### FIBRE CHANNEL PROTOCOLS

RDMA, SCSI, ASM

#### FPGA DEVICE

Microsemi SmartFusion2 M2S150

#### MEMORY

One bank of 1GB DDR3 SDRAM

One bank of 36Mbit QDRII+ SRAM

#### FLASH

One 32MB memory for storing a default configuration image

#### HOST INTERFACE

PCI Express Gen2 x4 (Pn5)

PCI 64-bit (Pn11, Pn12, Pn13)

XAUI (Pn5)

#### EXTERNAL INTERFACE

32 differential pairs (user configurable)

IRIG Interface for time synchronization with  $\mu$ second

resolution RS-232 serial interface for debug

#### THERMAL SENSORS

2 digital temperature sensors

#### COMPLIANCE

VITA 42.2, 42.3, 42.6 IEEE

802.3ae 2002

FC-FS-3 INCITS 470-2011

#### DIMENSIONS

74 mm (width) x 149 mm (length)

#### POWER REQUIREMENTS

Maximum 10W

#### TEMPERATURE

Operating: 0° C to 45° C at 600 LFM (air cooled)

Operating: -40° C to 70° C (conduction cooled)

Storage: -40° C to 85° C

#### FOR MORE INFORMATION:

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