



Solutions Overview



- **High-Performance Interface and FPGA Processor Cards**
- **High-Speed Serial FPGA IP Cores**
- **Platforms & Appliances**
- **Custom Engineering Services**

Ethernet

Ethernet Real-Time Publish-Subscribe (RTPS)

Hardware-based full-network stack implementation of Ethernet RTPS. Provides hardware-based IP/UDP/RTPS message segmentation and reassembly with label validation and filtering, label-mapped buffers, and DMA controllers. F-35 compatible interface mode available.



Fibre Channel (FC)

FC Link Layer

Complete layer 1/layer 2 solution for Fibre Channel. Provides easy-to-integrate frame interface. Supports rates of 1/2/4/8/16Gbs.

FC Anonymous Subscriber Messaging

Hardware-based full-network stack implementation of FC-ASM. Provides hardware-based label lookup, DMA controllers, and message chain engines. F-35 compatible interface mode available.

FC Upper Layer Protocol

Hardware-based full-network stack implementation of the FC-RDMA and FC-AV protocols. Provides hardware-based buffer mapping, DMA controllers, and message chain engines. F-18/F-15 compatible interface mode available.

Available pre-loaded on NWDV Hardware or as Standalone IP

Serial Front Panel Data Port (sFPDP)

sFPDP Link Layer

Designed to the ANSI/VITA 17.1-2015 specification supporting rates of 1/2/2.5/4/5Gbs. The sFPDP core provides a complete hardware implementation of the protocol with an easy-to-integrate frame interface.

sFPDP Express

Complete FPGA design provides sFPDP interface IP to ANSI/VITA 17.1-2015 specification. Supporting rates of 1/2/2.5/4/5Gbs, external memory interfaces, DMA controllers, PCIe interface, and software drivers. This IP provides out-of-the-box operation of an FPGA-based sFPDP interface. Easily add application-specific custom features.



Mil1394

1394b PHY

1394b (Beta) PHY layer hardware implementation. Includes standard PHY-Link interface.

Mil1394 OHCI Link Layer Controller

1394 AS5643-targeted OHCI Link Layer hardware implementation with STOF offload. Includes standard PHY-Link interface and AXI bus for PCIe or embedded processor interface.

Mil1394 GP2Lynx Link Layer Controller

1394 GP2Lynx Link Layer hardware implementation. Includes standard PHY-Link interface.

Mil1394 AS5643 Link Layer Controller

Hardware-based full-network stack implementation of AS5643 (Offload Engine). Provides hardware-based label lookup, DMA controllers, STOF offload, and message chain engines. F-35 compatible interface mode available.

ARINC 818

ARINC 818 DMA

ARINC 818 interface to processor solution. ARINC 818-2 specification compliance, hardware-based container processing, offload of frame handling including ARINC 818 Container offload, hardware-based Object processing, frame building/checking, CRC generation/checking, DMA controller, and Linux software driver.

ARINC 818 Stream

Built for FPGA-based streaming applications. ARINC 818-2 specification compliance, hardware-based container processing, offload of frame handling including ARINC 818 Container offload, hardware-based Object processing, frame building/checking, CRC generation/checking, streaming FPGA user interface.

Additional Protocols

HOTLink II

Complete layer 2 hardware implementation for HOTLink II. Provides easy-to-integrate frame interface. Supports full-rate, $\frac{1}{2}$ -rate, and $\frac{1}{4}$ -rate operation as specified by the standard. F-18 compatible interface implementation.

High-Speed Data Bus (HSDB)

Complete PHY and MAC layer hardware implementation for HSDB. Provides easy-to-integrate frame interface. F-22 compatible interface implementation.

Turnkey Modules

FPGA/Interface Solutions - Form Factor Options

1

Choose your XMC card



All New Wave DV XMC cards are available in alternate form factors via New Wave DV-provided carrier cards.

2

Select your required form factor carrier



PCIe Carrier

PXIe Carrier

VPX Carrier

3

Get...

Your Turnkey Module

Air-Cooled PCIe
w/ Front Panel IO



Air-Cooled VPX
w/ Front Panel IO



Air-Cooled PXIe
w/ Front Panel IO



Conduction-Cooled VPX
w/ Backplane IO



Conduction-Cooled VPX
w/ Front Panel IO



XMC/PMC Cards

FPGA/Interface Solutions - Pre-loaded or Customer Programmable

V1161



MAE
INNOVATOR
AWARD
WINNER

The V1161 is designed for rugged embedded applications requiring a combination of high-speed interfaces, network offloads, and onboard payload processing resources. The combination of the NVIDIA® Mellanox® ConnectX®-5 network interface device and the Xilinx® Versal® ACAP (FPGA) device allows for system designers to leverage off-the-shelf world-class Ethernet performance while deploying unique data processing and security algorithms in the onboard ACAP device.

Features

- Xilinx® Versal® VC1902, VC1802, VM1802, VM1502 ACAP (FPGA)
- NVIDIA® Mellanox® ConnectX®-5 network interface device
- Dual 10/25/40/50/100Gbs Ethernet ports
- Rugged optical ports via MPO (Female) on the front panel or VITA 66 optical backplane
- Electrical I/O via Pn6 also available
- Supports PCIe Gen4 x16, Gen4 x8, Gen3 x16, Gen3 x8
- VITA 42, VITA 20, VITA 47 ECC4-compliant XMC
- Wide range of operating system software support
- Available in air- and conduction-cooled XMC form factors
- Conformal coating and carrier card options available

Capabilities

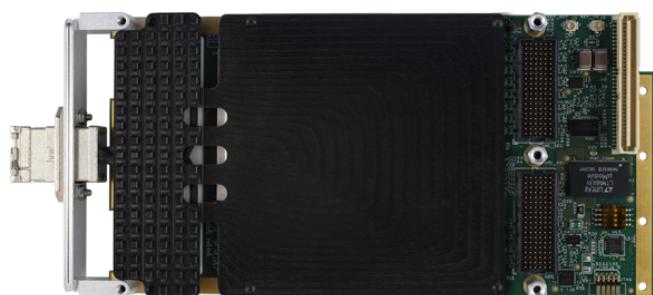
- Dual 10/25/40/50/100Gbs Ethernet ports with optical or electrical interfaces to both the front panel and backplane
- Performs as a low-latency high-bandwidth Ethernet interface card with FPGA-based application coprocessor
- Hardware offloads for UDP, TCP, RoCE v2, DPDK, GPUDirect, NVMeoF, +more



MAE
INNOVATOR
AWARD
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V1160

- Rugged card supporting dual port 10/25/40/50/100Gbs Ethernet
- NVIDIA® Mellanox® ConnectX®-5 network interface device
- Optical and electrical IO options available
- VITA 42, VITA 20, VITA 47 ECC4-compliant XMC
- Support for UDP, TCP, RoCE v2, DPDK, GPUDirect, NVMeoF, +more



V1163

- High-bandwidth IO + coprocessor ACAP (FPGA) card
- Xilinx® Versa® VC1902/VC1802/VM1502/VM1802 ACAP (FPGA)
- Up to 12 optical ports capable of 1-25Gbs/port
- VITA 42, VITA 20, VITA 47 ECC4-compliant XMC
- Available with preloaded interface IP



V1146

- Up to 9 transformer-coupled 1394b ports per card
- Microsemi® SmartFusion2® M2S150 FPGA
- VITA 42, VITA 20, VITA 47 ECC4-compliant XMC
- Supports: 1394b PHY, OHCI LLC, 1394 AS5643 LLC



V1144

- Up to 12 transformer-coupled 1394b ports per card
- Microsemi® SmartFusion2® M2S150 FPGA
- Front-panel and backplane IO options available
- Supports: 1394b PHY, OHCI LLC, 1394 AS5643 LLC

XMC/PMC Cards

FPGA/Interface Solutions - Pre-loaded or Customer Programmable

Powered by Xilinx® UltraScale™/UltraScale+™ FPGAs, the V1153 XMC card provides up to twelve 25G capable optical ports on the front/backplane plus sixteen high-speed links to the backplane. The V1153 is a rugged VITA 42-compliant module that meets the VITA 20 dimensions for conduction cooling and is compliant with VITA 47 ECC4 ruggedization for shock, vibration, and operating temperature range of -40° C to +85° C. The V1153 is perfect for high-bandwidth input/output and/or FPGA co-processing applications.

V1153



Features

- Xilinx® UltraScale(+)™ KU095 | VU3P FPGA
- One bank of 16GB DDR4 SDRAM
- Rugged optical ports via MPO (Female) on the front panel or VITA 66 optical backplane

- Electrical I/O via Pn6 also available
- 8-lane PCI Express Gen 3 host interface
- Available with a suite of networking IP

Capabilities

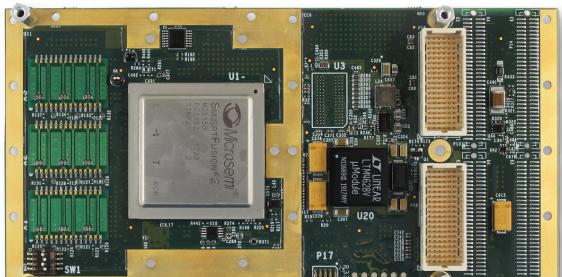
- Up to 12 front panel optical ports that can provide 1G to 25G bandwidth per port
- Performs as a low-latency, high-bandwidth NIC card, port replicator/aggregator, port mux, or FPGA accelerator card
- Variety of available off-the-shelf IP cores to provide a turnkey solution or use as a base for your custom interface needs

- 1/10/25G Ethernet
- 40/100G Ethernet
- 1/2/4/8G Fibre Channel
- 1/2/2.5/10G sFPDP
- Aurora (1G-25G)
- Custom Protocol



V1151

- 4 optical SFP+ ports capable of 25Gbs per port
- Xilinx® UltraScale™ KU095 or UltraScale+™ VU3P FPGA
- 8-lane PCI Express Gen 3 host interface
- VITA 42-compliant XMC, VITA 61 connectors available
- Supports: Ethernet, FC, sFPDP, ARINC-818, Aurora, Custom



V1147

- Rugged Flash-based FPGA coprocessor card
- Microsemi® SmartFusion2® M2S150 FPGA
- High speed electrical interfaces up to 5Gbs per lane
- Supports: PCI Express, PCI, XAUI, Ethernet, Custom

V1152

- 12 optical QSFP+ ports capable of 25Gbs per port
- Xilinx® UltraScale™ KU095 or UltraScale+™ VU3P FPGA
- 8-lane PCI Express Gen 3 host interface
- VITA 42-compliant XMC, VITA 61 connectors available
- Supports: Ethernet, FC, sFPDP, ARINC-818, Aurora, Custom



V1141

- Quad SFP+ ports capable of Ethernet or Fibre Channel up to 5Gbs
- Microsemi® SmartFusion2® M2S150 FPGA
- Supports PCI Express, PCI, and XAUI host interfaces
- Supports: Ethernet, FC, ARINC 818

VPX Modules

Open Architecture Heterogeneous Processing Modules



SOSA™
Sensor Open Systems Architecture

XILINX VERSAL™

NVIDIA® Mellanox®
TECHNOLOGIES

FIREFLY™

V6061

The V6061 is a next generation high-performance embedded computing 3U VPX module featuring the Xilinx® Versal® Adaptive Compute Acceleration Platform (ACAP) Prime or AI Core, the NVIDIA® Mellanox® ConnectX®-5 (MC-X5) network interface device, rugged optical and electrical I/O, and SOSA-aligned profile options. The V6061 is specifically targeted at applications requiring a combination of high-speed data interfaces, network protocol offloads, onboard processing resources, and optional data distribution to adjacent processing resources (CPUs/GPUs) in the system.



Features

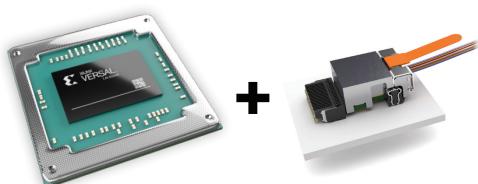
- Xilinx® Versal® VC1902/VC1802/VM1802/VM1502 ACAP (FPGA)
- NVIDIA® Mellanox® ConnectX®-5 Network Interface Device
- Up to eight (8) 1G to 25G optical ports via MPO front panel I/O or VITA 66 optical backplane I/O
- Hardware offloads for UDP, TCP, RoCE v2, DPDK, GPUDirect, NVMEoF, +more
- 2 banks of 4GB up to 1866MHz LPDDR4 SDRAM
- PCIe Gen3/Gen4, 25/100G Ethernet backplane support
- Onboard embedded PCIe Switch device
- Advanced APIs for multi-core and multi-processor architectures
- Wide range of operating system software support

Capabilities

- Designed specifically for sensor interfaces, data processing, and data distribution in VPX systems
- Programmable interface solution that leverages off-the-shelf world-class network performance with customizable application processor and data distribution

V6063

The V6063 is a cutting edge heterogeneous embedded computing 3U VPX module featuring the Xilinx® Versal® Adaptive Compute Acceleration Platform (ACAP), rugged optical and electrical high-speed IO, and SOSA-aligned profile options. The V6063 provides options for Versal® Prime or Versal® AI Core part selection. In a single 3U VPX card, the V6063 provides three 100G optical interfaces (300Gbps aggregate), large FPGA fabric, ARM processor cores, and optional AI engines.



Features

- Xilinx® Versal® VC1902/VC1802/VM1802/VM1502 ACAP (FPGA)
- Up to twelve (12) 1G to 25G optical ports via MPO front panel I/O or VITA 66 optical backplane I/O
- 2 banks of 4GB up to 1866MHz LPDDR4 SDRAM
- PCIe Gen3/Gen4, 25/100G Ethernet backplane support
- Thermal sensors for monitoring card temperature
- Robust FPGA development framework

Capabilities

- Heterogeneous computing card combining hard ARM processor cores, large FPGA fabric, AI Engines, and high-bandwidth interfaces
- Designed specifically for sensor interface, AI workloads, digital signal processing, video processing, application co-processing, and secure networking

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Pleasantly **helpful**.

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Videos & Webinars

www.newwavedv.com/videos

Check out our videos page to learn directly from our experts on interesting topics related to our technology solutions. We already have additional NWDV and partner-accompanied videos planned for periodic release.

Want a demonstration on a specific product or technology? Please inquire today!



2023 Industry Events

Every year New Wave DV attends, exhibits, and demonstrates at events throughout the United States. We'd love to setup a meeting with you around these dates; Please reach out!

1/23: VITA Embedded Tech Trends
Chandler, AZ



2/14: AFCEA WEST
San Diego, CA

3/6: AFA Air Warfare Symposium | Aurora, CO

3/19: AOC 47th Annual Dixie Crow Symposium
Robins AFB, GA

4/3: Navy League Sea Air Space National Harbor, MD

4/26: Quad-A (AAAA) Army Aviation Mission Solutions Summit | Nashville, TN

5/23: NI Connect | Austin, TX

8/28: AutoTestCon | National Harbor, MD

9/?: TSOA-ID Tri-Service Open Architecture Interoperability Demonstration | D.C. Area

9/?: SOSA TIM Expo | TBD

9/?: Quad-A (AAAA) Aircraft Survivability Equipment Symposium | TBD

9/11: AFA Air, Space & Cyber Conference
National Harbor, MD

10/9: AUSA | TBD

12/11: AOC 60th Annual Symposium & Convention
National Harbor, MD



Did You Know? - Whitepapers

www.newwavedv.com/whitepapers

New Wave DV is a trusted thought leader in the Aerospace/Defense industry and annually publishes informative whitepapers that may help you with a current or future project.

Our latest whitepaper covers Supporting Legacy & High-Speed Protocols with the SOSA™ Technical Standard using COTS XMCs.

PCI Express Cards

Powerful PCIe Interface Solutions - Pre-loaded or Customer Programmable

Powerful PCIe Network Solutions

Powered by the Xilinx® Virtex® UltraScale+™ FPGAs, the V5051 & V5052 PCIe cards boast sixteen 25Gbs capable ports on the front panel, and a Gen3 x16 PCIe host interface.

Features

- Xilinx® UltraScale(+™) VU9P | KU115 FPGA
- One bank of 16GB DDR4 SDRAM
- One bank of 144Mbit QDR-IV SRAM
- 16-lane PCI Express Gen 3 host interface
- Available with a suite of networking IP

V5051 | V5052



Capabilities

- Up to 16 front panel optical ports that can provide 1 to 25Gbs bandwidth per port
- Perfect for on-card application execution, algorithm-intensive data processing, and traffic filtering/monitoring
- Variety of available off-the-shelf IP cores to provide a turnkey solution or use as a base for your custom interface needs
- 1/10/25Gbs Ethernet
- 40/100Gbs Ethernet
- 1/2/4/8/16Gbs FC
- 1/2/2.5/4.25/5Gbs sFPDP
- ARINC 818
- Aurora (1 to 25Gbs)
- Custom Protocol



V5054

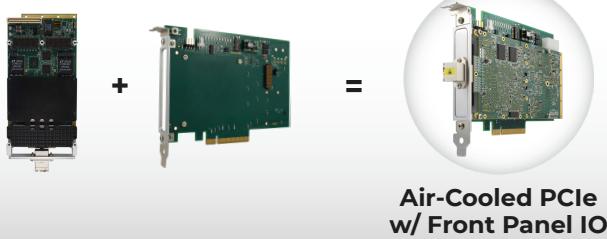
- Up to 30 transformer-coupled front-panel 1394b ports
- Xilinx® UltraScale™ KU115 FPGA
- Up to 10 independent 1394b nodes
- FPGA-based 1394b PHY, OHCI LLC, or AS5643 Offload Engine
- Rack-based breakout panel available provides standard 1394b connectors and strain relief



Single-Node PCIe OHCI Adapter

- Implemented using TI TSB41BA3 PHY & XIO2213B 1394 OHCI LLC
- Implements three S100β/S200β/S400β 9-pin Beta ports
- Configurable max port speed of S100β, S200β, and S400β
- x1 PCIe Revision 1.1 host interface
- Uses standard IEEE-1394 9-pin Beta cables

All New Wave DV XMC cards are available in PCIe form factor via New Wave DV-provided carrier cards



Air-Cooled PCIe
w/ Front Panel IO



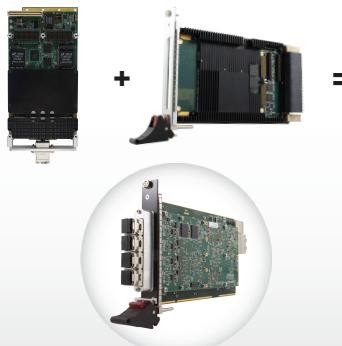
Triple-Node PCIe OHCI Adapter

- SAE AS5643 Mil1394 active transformer isolation
- All nine ports are accessed through high-density 68-pin connector
- Configurable maximum port speed of S100β, S200β and S400β
- x4 PCIe Revision 3.0 host interface
- 68-pin to nine 1394 9-pin Beta cable available

PXIe Cards

New Wave DV Interface Cards Available in PXIe

All New Wave DV XMC cards are available in PXIe form factor via New Wave DV-provided carrier cards



Air-Cooled PXIe
w/ Front Panel IO



NI PXIe Hardware with New Wave DV IP Cores



NI 6592



NI 6593



NI 6594



NI 7902

NWDV offers complete test solutions for high-speed serial protocols using NI's FPGA-based hardware. The designs are completely integrated with LabVIEW and other NI environments. Through NWDV's partnership with NI, PXIe-based systems for Aerospace and Defense can be quickly developed and deployed.



Solution
Partner

APPLICATION



Supported IP Cores

- ARINC 818
- Ethernet
- Fibre Channel
- Serial Front Panel Data Port (sFPDP)
- Serial RapidIO (sRIO)

Maintenance | Sustainment | Test



iRepeater Mil1394 Handheld Tester

Easily detect wire harness and module connectivity issues with this compact handheld tester. Designed to provide both node replacement and diagnostic information to help determine wire harness or module connectivity issues. Retrieve general 1394 bus and specific PHY port status information to quickly isolate connectivity issues down to a single port.

- Simple indication of good or bad wire harness / module connectivity
- Monitors Bus Resets & Port Connectivity to determine gross connectivity issues
- Monitors Bit Error Rate to quickly determine more marginal signal quality issues
- Three (3) S200 β and S400 β transformer-coupled ports
- Over 8 hours of battery life per charge
- IEEE-1394-2008 and SAE AS5643 and AS5643/1 compliant
- Ruggedized for use in harsh ATEX and Military environments

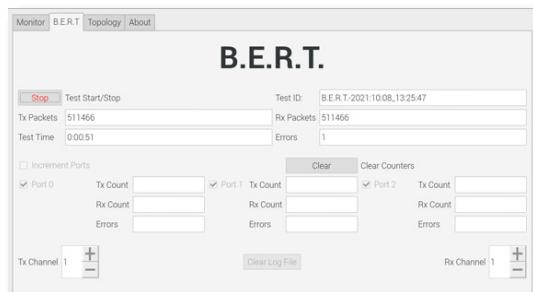


iVeriPHY Mil1394 Handheld Tester

The iVeriPHY Tester provides IEEE-1394b (beta) point-to-point connection and network diagnostic information and provides stimulus to test wire harness and 1394 network reliability. The single node (channel) standalone tester with three (3) transformer-coupled S200 β and S400 β beta-only ports is ideal for flight test applications. The standalone tester utilizes an integrated 7-inch back-lit touchscreen display for interfacing with its applications.

- Standalone tester, no external PC required
- Scalable system supports multiple applications
- Quickly determine wire harness and LRU connectivity issues
- Monitor bus level data to diagnose network issues

The iVeriPHY Tester is a scalable platform that supports an ever-growing list of software applications. The base configuration's "Monitor" application allows the user to observe port connection, bus reset and node count information. The Bus Error Rate Tester (BERT) application allows wire harness and device transmit and receive IEEE-1394b (Beta) validation. The Topology Viewer application provides the user a graphical representation of the 1394 bus (network), allowing the user to visually verify the topology and see missing nodes or intermittent connection issues.



9-Channel Bus & Node Monitoring Test Set

Designed for Electromagnetic Environmental Effects testing, the rugged IEEE-1394/MIL1394 9-Channel Bus and Node Monitoring Test Set monitors up to nine independent IEEE-1394-2008 Beta buses for bus resets and number of nodes present on the bus. The Test Set's remote display enables monitoring of test data from a safe distance using an electrically-isolated fiber optic connection.

- Monitors up to nine IEEE-1394 buses for bus reset and node count
- Standalone tester, no external PC required
- Battery-powered and well-shielded cables provide EMI tolerance
- Robust fiber optic cabling provides long distances and electrical isolation
- Scalable system supports multiple applications

Maintenance | Sustainment | Test



32-Port Programmable Switch

The 32-Port Programmable Switch is ideal for applications that are not covered by a standard Ethernet or Fibre Channel switch. Based on a powerful Xilinx® UltraScale+™ FPGA, this switch is perfect for applications including avionics testing platforms, in-line packet monitoring, on-switch application execution, and security algorithm implementation.

- FPGA-based 32-port network switch
- Implicit Fibre Channel mode available for avionics networks
- Ethernet and Fibre Channel capable, up to 25Gbs per port
- Embedded x86 processor available for control plane operations
- Customized functionality available

Mil1394 Single-Node Repeater

A 3-port transformer-coupled unenclosed S100β, S200β and S400β capable repeater/hub. The Repeater supports both vertical and right-angle connector options to enable different configuration and packaging. The small form factor provides both cost- and space-efficient solutions for cable length extension and device isolation to protect expensive testers from harsh environments. Both standard enclosure (see Mil1394 Dual Quad-Port Repeater Hub below) and custom enclosure options available.

- Implemented with the Texas Instruments™ TSB41BAQ3 PHY
- Active transformers provide electrical isolation and increases test distance
- Configurable maximum port speed of S100β, S200β and S400β
- Activity LED to indicate if 1394 packets are present on the bus
- Supports dual power source options (Example: AC to DC adapter & battery)
- Vertical and right-angle connector options

Mil1394 Dual Quad-Port Repeater Hub

Two quad-port Mil1394 transformer-coupled S200β and S400β capable repeaters/hubs conveniently enclosed in a 1U 19inch rack-mount enclosure. Provides a cost- and space-efficient solution to extend cable distances, isolate 1394 test equipment from modules during testing, and better manage up to four directly connected devices through a single hub.

- Integration of two 4-port hubs using the Texas Instruments™ TSB41BA3F PHY in a single 1U 19" rack-mount chassis
- Mil1394 active transformer-coupled ports allow for longer cable length
- Standard 9-Pin bilingual connectors support connection of beta-only and bilingual cables
- Direct connection of four devices without additional daisy-chaining

IEEE-1394b SFP Transceiver

Copper & Fiber Optic

The New Wave DV small form-factor pluggable (SFP) IEEE-1394b transceivers work at the physical network layer using bit-for-bit operations. The SFPs are logically transparent (they don't appear as nodes on the 1394 bus) to other network devices. When coupled with a Media Cross Connect™ system, the SFP-1394 supports up to a 2x range extension, topology changes, fiber-to-copper media conversion, and a full range of data rates.

- Copper Data Rates: S100β, S200β, S400β, and S800β
- Fiber Data Rates: S100β, S200β, S400β, S800β, and S1600β
- Full transparency to other network nodes
- Two media connection models:
 - 9-pin (FW-SFP-1394B)
 - LC optical (FW-SFP-FO-1394B)
- IEEE-1394b (Beta) standard compliant

Design & Verification Services

Engagement & Service Types

New Wave DV provides custom engineering services and welcomes the opportunity to create a solution unique to your specific requirements.



New Wave DV has a dynamic team that excels at hardware, FPGA/ASIC, software, and systems design and development using the industry's latest tools and technologies.

Our team is made up of domain experts in high-speed interfaces, FPGA processing, rugged circuit card design, network offload, and systems operations. We have a long history of successful programs in the Mil/Aero/Defense market including on fixed-wing, rotary-wing, ground, and surface/subsurface platforms. Our engineering resources and expertise enable customers to meet project deadlines, mitigate risk, and reduce overall program cost.

Solutions can be built upon existing New Wave DV products or built from the ground up. We will analyze your requirements, leverage existing hardware and IP cores where possible, create new designs where required, and ultimately deliver your solution.

Engagement Types

Modified COTS Design

New Wave DV will perform a requirements review with the client and leverage, to the extent possible, existing New Wave DV hardware, firmware, and software products to meet client requirements. When necessary, new development will be performed in areas required to meet the customer objective.

This approach keeps non-recurring engineering efforts to a minimum and reduces schedule for delivery.

Turnkey New Design

New Wave DV will develop a new hardware/firmware/software product for the client designed to their requirements or Statement of Work.

New Wave DV manages the project from concept to product delivery, giving regular updates and providing opportunities for feedback from the client.

Staff Augmentation

New Wave DV offers engineering resources to client-led development efforts. In this model, high-quality New Wave DV engineering resources are provided to perform work as directed and prioritized by the client.

This model is perfect for scenarios where the client needs to leverage engineering expertise to solve program challenges.

Service Types

FPGA/ASIC Design

LabVIEW Development

FPGA/ASIC Verification

High-Speed Interface Development

Printed Circuit Board Design

Systems Architecture

Software Driver Development

Ultra-Low Latency Network Design

Network Interface Design

New Wave DV has a long history and deep expertise in developing FPGA-based hardware, firmware, and software to deploy high-bandwidth and ultra-low latency sensor, storage, communication, and network interfaces. The interfaces typically reside within a data processor element (for example, the processor receiving sensor data) or within the data generator (for example, the sensor transmitting data to receivers). These data systems often have multiple high-speed data ports, feature network stack offload and/or data pre-processing, data aggregation/arrangement, security algorithm enforcement, and have high-bandwidth processor chip interfaces such as PCIe, SRIO, or Ethernet to CPUs/GPUs within the system. Typical system applications include mission computers, radar systems, electronic warfare units, signal intelligence devices, EO/IR sensor systems, and video processors.

Protocol Bridges

In the Aerospace and Defense industry, long platform life spans are the norm. When systems are being upgraded or enhanced, new equipment may need to connect to legacy interfaces to maintain system compatibility. Often, new COTS equipment may not have the required native interfaces to connect directly to the platform. FPGA-based protocol bridges are an ideal solution for this scenario. The protocol bridges allow new and legacy protocols to be bridged together in a transparent high-bandwidth and low-latency fashion. These FPGA bridge implementations allow for new COTS equipment to be used on existing platforms while requiring no changes to the existing equipment on that platform. New Wave DV has delivered many of these types of devices, including but not limited to bridges for Fibre Channel to Ethernet, HSDB to Ethernet, ARINC-818 to Ethernet, ARINC-818 to HDMI, and others.



Multi-Level Secure Networking

New Wave DV has the expertise to implement the required network security features and capabilities that are critical to Aerospace and Defense systems. These security functions are targeted at preventing and detecting intrusions from unauthorized external systems. Additionally, they enforce data segregation between multiple valid authorized systems operating on different operational levels. New Wave DV primarily implements these features in FPGA-based network applications where features such as packet inspection, filtering, labeling, segregating, and modification can take place in line with the traffic flow without latency or throughput implications.

Interface Test Instrumentation

A key focus at New Wave DV is the ability to deliver test equipment to support system interface design, test, and validation. This test equipment is used in design validation, system integration, simulators, emulators, production tests, and maintenance equipment. Test equipment from New Wave DV has been developed in standard form factors such as PCIe and PXIe, as well as customer-specified custom form factors. New Wave DV test equipment supports standard interfaces such as Ethernet, Fibre Channel, and 1394b, but custom proprietary interfaces can also be developed. Additionally, New Wave DV firmware and software developed for test equipment has features for validating key metrics such as bandwidth and latency as well as testing the robustness of a design via error and protocol-anomaly injection.

Enabling Our Partners to Change the World

New Wave Design and Verification (New Wave DV) is driven to help our partners change the world. Our products and services can be found in critical programs and platforms across the US and allied countries' military, aerospace, medical, and energy industries. We are proud of who we work for and the impact we make with our partners.

New Wave DV products and services are focused on high-bandwidth, ultra-low latency, and specialized networking and interface solutions. These solutions are designed and built for rugged and harsh environments.

Our team is made up of passionate engineers with extensive experience designing, building, testing, and delivering electronic systems. By providing off-the-shelf solutions and custom engineering resources, New Wave DV confidently serves you to meet your cost, schedule, and technical requirements.

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