

New

VX4718

**VME to USB
3.0/Ethernet/Optical
Link Bridge**



Features



- USB 3.0, Gigabit Ethernet and CONET (CAEN Daisy Chainable Optical Link Protocol) interfaces
- Designed for high performances at high transfer rates
- Compliant with **A2818**, **A3818**, **A4818**, and the **A5818** cards for optical link control
- Up to 8 VME crates controlled by 1 CONET link
- VME Master (arbiter or requester)
- Cycles: RW, RMW, BLT, MBLT, IACK, ADO, ADOH
- Addressing: A16, A24, A32, CR/CSR, LCK
- Data width: D8, D16, D32, D64
- System Controller capabilities
- Interrupt handler
- Transparent interrupt propagation from VME to PCIe
- Front panel Dataway Display (remotely readable from PC)
- Front-panel LEMO TTL/NIM fully programmable I/Os (4 outputs and 2 inputs)
- Fully remotely controllable by Web Interface
- Libraries, Demos and Software tools for Windows ® and Linux ®
- Custom software can run directly on the embedded Linux-based MPSoC

Description

The **VX4718** is CAEN New Bridge with enhanced data rate and extended interfacing capabilities, thanks to the on-board MPSoC (including an ARM processor running Linux). The board is a VME Master which can be controlled by an external PC via USB 3.0 and Gigabit Ethernet connections. Optical link interface is also available (CAEN CONET protocol). The mechanics is 1-unit wide VME 6U.

The optical link connection between the VX4718 and the host PC requires the **A5818** PCI Express CONET2 Controller and the **A4818** USB3-to-CONET Bridge and an optical fiber cable (**AI2700** Optical Fiber Series). The VX4718 is also compatible with CAEN **A3818** PCI Express CONET Controller and CAEN **A2818** PCI CONET controller. Multi-crate sessions can be easily performed thanks to the optical Daisy chain capability: up to eight VX4718 units can be controlled by a single **A2818/A3818/A4818** building a CONET Optical Network.

The VX4718 can perform all the cycles foreseen by the VME64 standard except those intended for 3U boards. The Bridge can operate as VME System Controller (normally when plugged in the slot 1) acting as a Bus Arbiter in Multi-Master systems. The activity on the VME bus can be monitored in detail both locally (through an 88-LED DataWay Display) and remotely.

The front panel of the VX4718 hosts 6 TTL/NIM programmable I/OS on LEMO connectors: four outputs (default assignment is: DSN, AS, DTK, BERR) and two inputs. The I/OS can be programmed via USB, Ethernet and Optical Link to implement functions like Timer, Counter, Pulse generator, I/O register, and others.

It is possible to integrate the VX4718 into the most common Windows® and Linux® computers by CAEN dedicated drivers. Middleware libraries and useful example demos are also provided. Moreover, the presence of an embedded Linux- based CPU gives the chance of running custom software directly on-board.

The user can completely set and monitor the VX4718 by Web Interface, including the firmware upgrade.

Technical Specifications

PHYSICAL

Form Factor: 1-unit wide VME64X 6U

Weight: 350 g

PC INTERFACE

USB	Ethernet	Optical Link
USB 3.0 Type-C socket	Gigabit Ethernet RJ45 shielded jack	CONET (CAEN proprietary protocol) SFP+ connector

TRANSFER RATE

Maximum transfer rate with a CAEN slave readout in MBLT64:

- Up to 80 MB/s via CONET2
- Up to 60 MB/s via USB 3.0
- Up to 60 MB/s via Ethernet

ON-BOARD CPU

Xilinx Zynq® UltraScale+ MPSoC (Multiprocessor System-on-Chip)

ADDRESSING

A16, A24, A32, CR/CSR, LCK; ADO, ADOH cycles

DATA CYCLES

D08, D16, D32 for R/W and RMW; D16, D32 for BLT, D64 for MBLT

INTERRUPT CYCLES

D08, D16, D32, IACK cycles

INTERRUPTS TRANSFER AND MONITOR

Optical Link	USB
<ul style="list-style-type: none">• VME interrupts IRQ[7:1] passed directly from VME to the PCIe bus via optical link;• host system is notified asynchronously (polling not required)	VME interrupts are not directly passed to the PC; host system has to poll IRQ[7:1] via USB
Ethernet VME interrupts are not directly passed to the PC; host system has to poll IRQ[7:1] via Ethernet	

LED DISPLAY

Data bus, address bus, address modifier, interrupt request, control signals

PANEL I/Os

OUT[0:3]

- 4 signal outputs
- Single-ended NIM/TTL ($Z_{in} = 50 \Omega$)
- LEMO 00 female socket
- Software programmable

IN[0:1]

- 2 signal inputs
- Single-ended NIM/TTL (HW programmable)
- $Z_{in} = 50 \Omega$ or $1 \text{ k}\Omega$ hardware selectable
- LEMO 00 female socket
- Software programmable

SOFTWARE

- Windows® and Linux® support
- Drivers for the CONET communication link
- Web Interface (board configuration, firmware upgrade, read/write access to the VME bus)
- Middleware C/C++ libraries
- Linux OS embedded on ARM processor

POWER REQUIREMENTS

- 1.3 A @ +5V
- 50 mA @ +12V
- 180 mA @ -12V

Ordering Options

Code	Description
WVX4718XAAA	VX4718 - VME64-USB 3.0, Ethernet and Optical Link Bridge RoHS

Related Software

CAENVMELib Library



Interface library for CAEN VME Bridges

Related Products

VME8004X



2U 4 Slot VME64X Mini Crate

VME8100



8U 21 Slot VME64/64X Enhanced Crate Series

μ-crate



Desktop single-slot VME64X Crate

VME8200

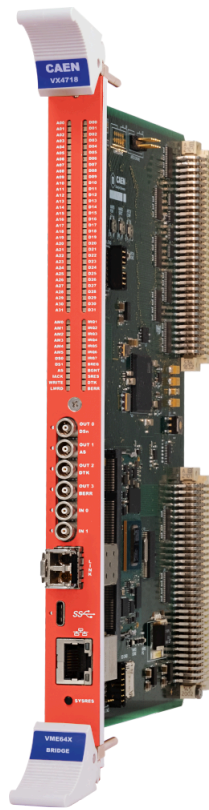


9U 21Slot VME64X Enhanced Crate series

VME8008X



4U 8 Slot VME64X Mini Crate



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CAEN S.p.A.

Via Vetraia 11
55049 - Viareggio
Italy

Phone +39.0584.388.398

Fax +39.0584.388.959

info@caen.it

www.caen.it

CAEN GmbH

Brunnenweg 9
64331 Weiterstadt, Germany

Phone +49 (0)212.254.4077

Mobile +49 (0)151.16.548.484

info@caen-de.com

www.caen-de.com

CAEN Technologies, Inc.

1 Edgewater Street - Suite 101
Staten Island, NY 10305
USA

Phone +1.718.981.0401

Fax +1.718.556.9185

info@caentechnologies.com

www.caentechnologies.com

CAENspa India Private Limited

B205, BLDG42, B Wing,
Azad Nagar Sangam CHS,
Mhada Layout, Azad Nagar, Andheri West
Mumbai, Maharashtra 400053, India

info@caen-india.in

www.caen-india.in

