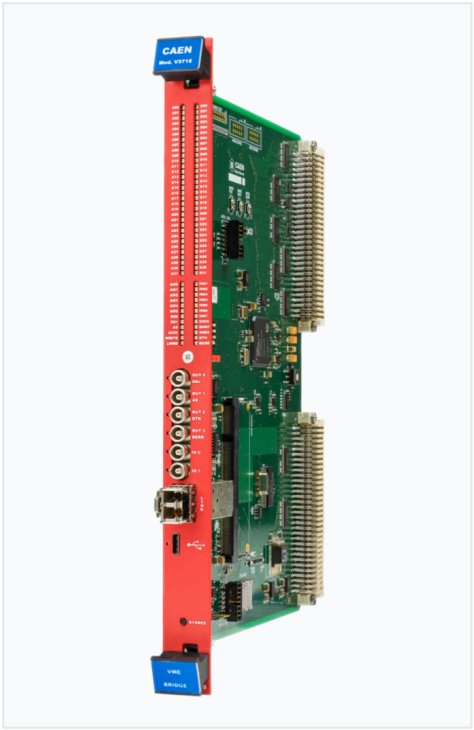
V3718

VME to USB 2.0 / Optical Link Bridge

VME	USB 2.0 / Optical Link -> VME	80
Package	Link	Max Transfer Rate (MByte/s)

The V3718 is a 1-unit-wide VME 6U to USB 2.0/CONET2 optical-link bridge integrating a VME master, system controller, arbiter/requester and interrupt handler. It supports VME64 RW, RMW, BLT, MBLT, IACK, ADO and ADOH cycles; A16, A24, A32, CR/CSR and LCK addressing; and D8, D16, D32 and D64 data widths. Transfer rates reach 30 MB/s via USB 2.0 and 80 MB/s via CONET2. Up to 8 VME crates can be controlled through one CONET link. The front panel provides an 88-LED DataWay Display and six programmable TTL/NIM LEMO I/Os: four outputs and two inputs.



Overview

Product Highlights

- USB 2.0 and CONET2 (CAEN Daisy Chainable Optical Link Protocol) interfaces
- Up to 8 VME crates controlled by 1 CONET link
- VME Master (arbiter or requester)
- Addressing: A16, A24, A32, CR/CSR, LCK
- System Controller capabilities
- Transparent interrupt propagation from VME to PCIe
- Front-panel LEMO TTL/NIM fully programmable I/Os (4 outputs and 2 inputs)
- Compliant to A3818 , A4818, and A5818 cards for optical link control
- From 30 MB/s via USB type C to 80 MB/s data transfer rate via CONET2
- Cycles: RW, RMW, BLT, MBLT, IACK, ADO, ADOH
- Data width: D8, D16, D32, D64
- Interrupt handler
- Front-panel DataWay Display (remotely readable from PC)
- Libraries, Demos and Software tools for Windows® and Linux®

Product Description

AT A GLANCE	
Package	**VME**
Link	**USB 2.0 / Optical Link -> VME**
Max Transfer Rate (MByte/s)	**80**
No. of Links	**1 Opt. + USB 2.0**
Programmable I/O	**4 out + 2 in TTL / NIM**
Data-way Display	**Yes**

The CAEN **Mod. V3718** is the new **VME to USB 2.0/Optical Link Bridge** that fully replaces the V1718 (VME-USB) and V2718 (VME- CONET) models. The Bridge Implements a VME master controlled by a PC via USB 2.0 and Optical Link (CAEN CONET protocol) including all the functions of its two predecessors in a unique device. The mechanics is 1-unit wide VME 6U.

The optical link connection between the V3718 and the host PC requires the A5818 PCI Express CONET2 Controller, or the A4818 USB3-to-CONET Bridge, and an optical fiber cable (AI2700 – Optical Fiber Series). The V3718 is also compatible with CAEN A3818 PCI Express CONET Controller. Multi-crate sessions can be easily performed thanks to the CONET Daisy chain capability: up to eight V3718 units controlled by a single **A3818/A4818** building a CONET Optical Network. The USB data transfer over the USB 2.0 compliant interface takes place through the High-Speed Bulk Transaction protocol.

The V3718 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.

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Overview (continued)

The front panel of the V3718 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 and Optical Link to implement functions like Timer, Counter, Pulse generator, I/O register, and others.

The supported data transfer rate is up to 30 MB/s by USB 2.0 and up to 80 MB/s by CONET2. Thanks to the 128KB memory buffer, the activity on the VME bus is not slowed down by the transfer rate on the USB port, or on the CONET one, especially when several V3718 units share the same network.

The V3718 can be integrated into the most common Windows® and Linux® computers by CAEN dedicated drivers. Middleware libraries and useful example demos are also provided. Firmware can be upgraded via USB/Optical link.

Technical Specifications

Physical	• Form Factor: 1-unit wide VME 6U • Weight: 315 g
PC Interface	• USB: USB 2.0, Type-C socket • Optical Link: CONET (CAEN protocol), SFP+ connector
Transfer Rate	• up to 80 MB/s with CONET2 • up to 30 MB/s with USB 2.0
Addressing	A16, A24, A32, CR/CSR, LCK; ADO, ADOH cycles
Interrupt Cycles	D08, D16, D32, IACK cycles
Interrupts Transfer and Monitor	• Optical Link: VME interrupts IRQ[7:1] passed directly from VME to the PCIe bus via optical link; host system is notified asynchronously (polling not required) • USB: VME interrupts are not directly passed to the PC; host system has to poll IRQ[7:1] via USB
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 (Zin = 50 Ω)
- LEMO 00 female socket
- Software programmable

IN [0:1]
- 2 signal inputs
- Single-ended NIM/TTL (Zin = 50 Ω)
- LEMO 00 female socket
- Software programmable

Software

- Windows® and Linux® support
- Drivers for the communication links (USB 2.0, CONET)
- Middleware libraries C/C++
- Example demos and firmware upgrade tool

Power Requirements	0.6 A @ +5V 50 mA @ +12V 50 mA @ -12V

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Ordering Information

ORDERING CODE	DESCRIPTION
WV3718XAAAAA	V3718 – VME-USB Bridge

1. Ordering codes and descriptions are reproduced from the product record. Availability is confirmed at order entry.

Related Products

A4818 — USB 3.0 to CONET2 Adapter

A5818 — CONET2 Controller based on PCI Express Gen 3 interface

NV8020A — 7U CRATE VME/NIM 8 slot VME64 365W, 5 slot NIM 150W

VME8001 — 1U 2 Slot VME64 Mini Crate

VME8004B — 2U 4 Slot VME64 Mini Crate

VME8004X — 2U 4 Slot VME64X Mini Crate

VME8008B — 4U 8 Slot VME64 Mini Crate

VME8008X — 4U 8 Slot VME64X Mini Crate

VME8011 — 7U 21 Slot VME64 Low Cost Crate

VME8100 — 8U 21 Slot VME64/64X Enhanced Crate Series

VME8200 — 9U 21Slot VME64X Enhanced Crate series

µ-crate — Desktop single-slot VME64X Crate

Software & Control Tools

CAEN Toolbox — Multi-Functional Software Suite for the Upgrade of Front-end Boards, Bridges and Power Supplies

CAENVMELib Library — Interface library for CAEN VME Bridges

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