V4718

VME to USB 3.0/Ethernet/Optical Link Bridge

VME	USB 3.0 / Ethernet / Optical link -> VME	80
Package	Link	Max Transfer Rate (MByte/s)

The V4718 is a 1-unit wide VME 6U Master bridge with USB 3.0, Gigabit Ethernet and CONET2 optical-link interfaces, controlled by an external PC or its embedded Linux-based MPSoC. It supports VME64 cycles RW, RMW, BLT, MBLT, IACK, ADO and ADOH; A16, A24, A32, CR/CSR and LCK addressing; and D8, D16, D32 and D64 data widths. It provides System Controller and interrupt-handler functions, up to 8-crate CONET2 daisy chaining, an 88-LED Dataway Display, and six programmable LEMO TTL/NIM I/Os: four outputs and two inputs.

CAEN
Tools for Discovery

Overview

Product Highlights

- USB 3.0, Gigabit Ethernet and CONET2 (CAEN Daisy Chainable Optical Link Protocol) interfaces
- Compliant with A2818, A3818, A4818, and A5818 cards for optical link control
- 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)
- Libraries, Demos and Software tools for Windows ® and Linux ®
- Designed for high performances at high transfer rates
- Up to 8 VME crates controlled by one CONET2 link
- Cycles: RW, RMW, BLT, MBLT, IACK, ADO, ADOH
- Data width: D8, D16, D32, D64
- Interrupt handler
- Front panel Dataway Display (remotely readable from PC)
- Fully remotely controllable by Web Interface
- Custom software can run directly on the embedded Linux-based MPSoC

Product Description

AT A GLANCE	
Package	**VME**
Link	**USB 3.0 / Ethernet / Optical link -> VME**
Max Transfer Rate (MByte/s)	**80**
No. of Links	**1 Opt. + 1 Eth. + USB 3.0**
Programmable I/O	**4 out + 2 in TTL / NIM**
Data-way Display	**Yes**

The CAEN **Mod.V4718** 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 V4718 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 V4718 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 V4718 units can be controlled by a single A2818/A3818/A4818 building a CONET Optical Network.

The V4718 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.

 — © 2026 CAEN S.p.A. All rights reserved. Specifications are subject to change without notice.

Overview (continued)

The front panel of the V4718 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 V4718 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 V4718 by Web Interface, including the firmware upgrade.

Technical Specifications

PHYSICAL

Form Factor	Weight
1-unit wide VME 6U	350 g

PC INTERFACE

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

 — © 2026 CAEN S.p.A. All rights reserved. Specifications are subject to change without notice.

Technical Specifications (continued)

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

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 (Zin = 50 Ω)
LEMO 00 female socket
Software programmable

IN[0:1]
2 signal inputs
Single-ended NIM/TTL (HW programmable)
Zin = 50 Ω or 1 kΩ 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

 — © 2026 CAEN S.p.A. All rights reserved. Specifications are subject to change without notice.

Ordering Information

ORDERING CODE	DESCRIPTION
WV4718XAAAAA	V4718 – VME64-USB 3.0, Ethernet and Optical Link 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

 — © 2026 CAEN S.p.A. All rights reserved. Specifications are subject to change without notice.