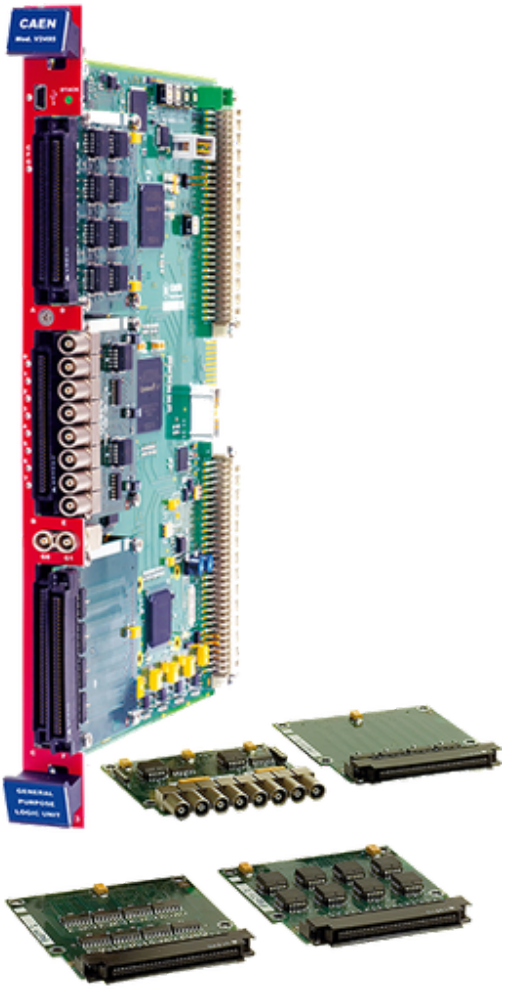
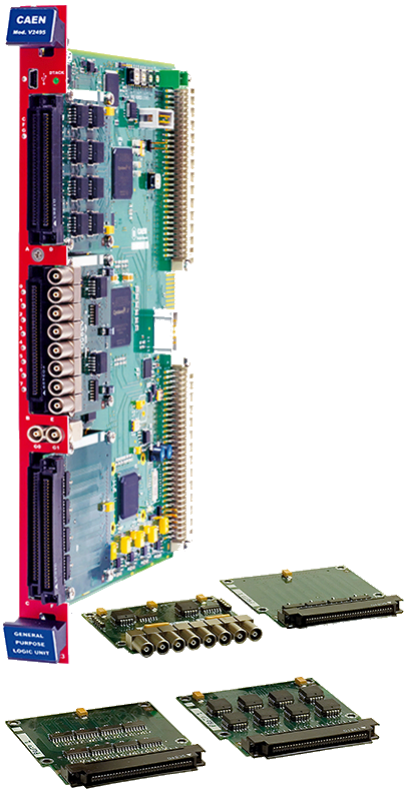
V2495

Programmable Logic Unit PLUS



Features



- User customisable FPGA Unit
- LVDS/ECL/PECL inputs (differential)
- 64 inputs, expandable to 162 (with 32 outputs)
- 32 outputs, expandable to 130 (with 64 inputs)
- 32 independent programmable Gate and Delay Generators
- 3 expansion slots for piggyback board
- Mini-USB 2.0 Connection
- Available in Desktop version **DT5495**

Description

The CAEN **Mod.V2495** is a general purpose programmable FPGA and I/O unit housed in a 1-unit wide VME 6U module. The board is a suitable solution for the implementation of digital functions such as Coincidence, Trigger Logic, Gate and Delay generator, Input/Output Register and more.
The architecture of the V2495 is based on the User FPGA **(Altera Cyclone V 5CGXC4, 50K Logic Elements)** which is directly interfaced to the front panel I/Os (up to **162** inputs and up to **130** outputs) and to an internal local bus.
The V2495 can be controlled and programmed "on the fly" via the **VME Bus** or directly through the Mini-USB connector on the front panel. A Software tool is provided for free to easily upload the custom Firmware on the User FPGA.

The V2495 is also completed by **32 internal delay lines** that can be used to generate programmable gate and delay signals. The channel interface can be freely expanded by adding up to **three independent piggyback boards** (there are 3 expansion slots interfaced to the User FPGA), choosing between the five available types:

- **A395A** 32 LVDS/ECL/PECL input channels
- **A395B** 32 LVDS output channels
- **A395C** 32 ECL output channels
- **A395D** 8 NIM/TTL input/output channels
- **A395E** 8 Analog output 16 bit channels

Therefore, the Mod. V2495 can achieve a maximum number of 194 I/O channels.

Model Compare:

Piggyback	A395A	A395B	A395C	A395D	A395E
No. of channels	32	32	32	8	8
Channel type	Digital Input	Digital Output	Digital Output	Digital I/O selectable	Analog Output
Description	Differential LVDS/ECL/PECL	Differential LVDS	Differential ECL	NIM/TTL	16 bit resolution Output range: ± 5V @10 Ω RL ± 4V @200 Ω RL
Note	single ended TTL optional	LVDS 100 Ω RI	ECL	NIM/TTL selectable 50 Ω Rt	DAC board equipped with **DT5495** - **Vx495** Firmware and VHDL source for custom development
Bandwidth	200 MHz	250 MHz	300 MHz	250 MHz	-
Front panel connector	3M P50E-068-P1-SR1 type (34+34) pins	3M P50E-068-P1-SR1 type (34+34) pins	3M P50E-068-P1-SR1 type (34+34) pins	LEMO 00	LEMO 00

FW2495SC is a FPGA firmware that allows to use the Mod. V2495 as a **Multievent latching scaler housing up to 160 independent counting channels** (this maximum number of channels is achieved if the V2495 is expanded with three **A395A** boards).

Technical Specifications

Form Factor

1-unit wide, 6U high VME64

I/O Sections A and B

Nr. of Channels

32

Logic

Direct

Bandwidth

200 MHz

Direction

Input

Front Panel Connector

Robinson Nugent P50E-068-P1-SR1-TG type, (34+34) pins

Signal

- Differential LVDS/ECL/PECL
- (single ended TTL optional)
- Zdiff: 100 Ω
- Extended Common Mode Input range: -4V to +5V
- Fail Safe input feature

I/O Section C

Nr. of Channels

32 channels

Signal

- Differential LVDS
- Require 100 Ω termination

Logic

Direct

Direction

Output

Front Panel Connector

Robinson Nugent P50E-068-P1-SR1-TG type, (34+34) pins

Bandwidth

250 MHz

I/O Section G

Nr. of Channels

32 channels

Signal

- Single ended NIM/TTL selectable
- Oprn 50 Ω termination selectable

Logic

- TTL IN = Direct
- TTL OUT = Direct
- NIM IN = Invert
- NIM OUT = Direct

Direction

I/O selectable

Front Panel Connector

LEMO 00

Bandwidth

250 MHz

Gate and Delay Generator

	Min.	Typ.	Max.
Minimum Delay/Gate	9.6 ns	10.7 ns	11.8 ns
Maximum Delay/Gate	631 µs	701.2 µs	771.5 µs
Maximum channel-to-channel spread	20%		

Power Requirements

- 1.0A (max.) @ +5V
- +12V and -12V rails are not used

A395A Mezzanine Board

No. of channels	32
Direction	Input
Logic	Direct
Signal	• Differential LVDS/ECL/PECL (single ended TTL optional) Zdiff: 100 Ω • Extended Common Mode input range: -4V to +5V Fail Safe input feature
Bandwidth	200 MHz
Front Panel Connector	Robinson Nugent P50E-068-P1-SR1-TG type, (34+34) pins
Power Consumptions	0.1 A (max) @ +5V internal power supply; +12V and -12V power supply are not used

A395B Mezzanine Board

No. of channels	32
Direction	Output
Logic	Direct
Signal	• Differential LVDS • Requires 100 Ω termination
Bandwidth	250MHz
Front Panel Connector	Robinson Nugent P50E-068-P1-SR1-TG type, (34+34) pins
Power Consumptions	0.1 A (max) @ +5V internal power supply; +12V and -12V internal power supply are not used

A395C Mezzanine Board

No. of channels	32
Direction	Output
Logic	Direct
Signal	Differential ECL
Bandwidth	300 MHz
Front Panel Connector	Robinson Nugent P50E-068-P1-SR1-TG type, (34+34) pins
Power Consumptions	1.4 A (max) @ +5V internal power supply; +12V and -12V internal power supply are not used

A395D Mezzanine Board

No. of channels	8
Direction	Output
Logic	I/O selectable
Signal	selectable TTL/NIM: • TTL IN = Direct • TTL OUT = Direct • NIM IN = Invert • NIM OUT = Direct
Bandwidth	250MHz
Front Panel Connector	LEMO 00
Power Consumptions	1.1 A (max) @ +5V internal power supply; +12V and -12V internal power supply are not used

A395E Mezzanine Board

No. of channels	8
Direction	Output
Logic	Analog
Signal	16-bit resolution • ±5V @10kΩ RL • ±4V @200Ω RL
Bandwidth	n.a.
Front Panel Connector	LEMO 00
Power Consumptions	0.3 A (max) @ +5V internal power supply; +12V and -12V internal power supply are not used

Communication Interface

VME
VME64X compliant, Addressing space: A24, A32, Data Transfer mode: D16, D32, BLT32, Geographical addressing (VX2495), Multicast commands

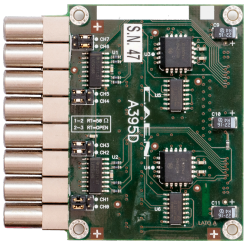
USB
USB 2.0 compliant

Ordering Options

Code	Description	
WV2495XAAAAA	V2495 - Programmable Logic Unit PLUS	RoHS

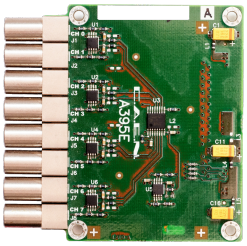
Accessories

A395D



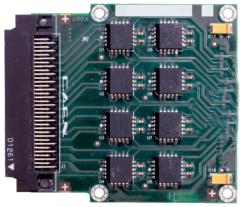
Piggyback board for Vx495 and DT5495

A395E



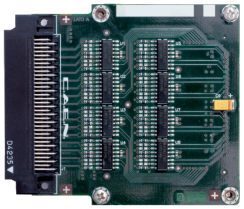
Piggyback board for Vx495 and DT5495

A395C



Piggyback board for Vx495 and DT5495

A395A

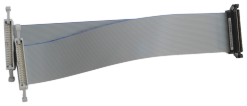


Piggyback board for Vx495 and DT5495

A966

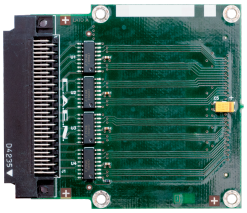
Cable assembly 68 pin P50 to four 2.54mm 16 pin male - 25 cm

A967



Cable assembly 68 pin P50 to two 2.54mm 34 pin male - 25 cm

A395B



Piggyback board for Vx495 and DT5495

Related Software

CAEN Toolbox

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

Related Products

N1081B

NIM Four-Fold Programmable Logic Unit

CAEN PLU Library

A C Library for DT5495 and V2495 boards

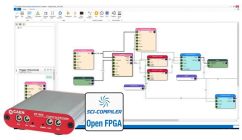
V4718

VME to USB 3.0/Ethernet/Optical Link Bridge

VME8100

8U 21 Slot VME64/64X Enhanced Crate Series

Sci-Compiler SMART



Evaluation and learning kit for SCI-Compiler

V3718

VME to USB 2.0 / Optical Link Bridge

VME8001

1U 2 Slot VME64 Mini Crate

FW2495SC

128 Channels Latching Scaler for V2495 and DT5495

VME8200

9U 21Slot VME64X Enhanced Crate series

µ-crate

Desktop single-slot VME64X Crate

VME8010

7U 21 Slot VME64 Low Cost Crate

VME8004B

2U 4 Slot VME64 Mini Crate

VME8008X

4U 8 Slot VME64X Mini Crate

CAEN Upgrader

Firmware Upgrade Tool for Front-end Boards Bridges & VME Power Supply

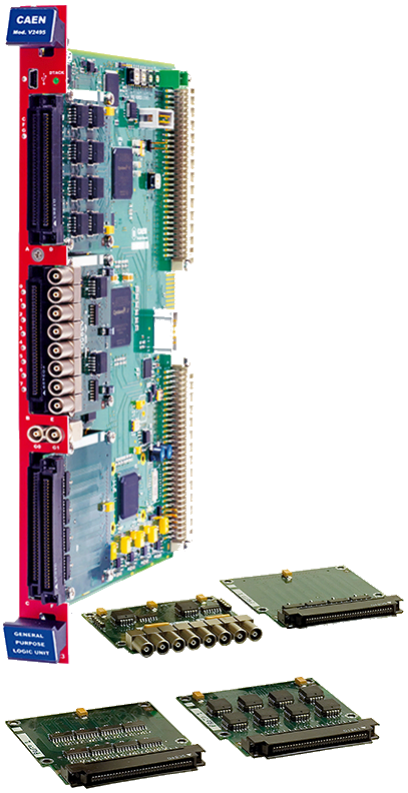
VME8004X

2U 4 Slot VME64X Mini Crate

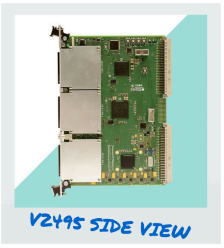
VME8011

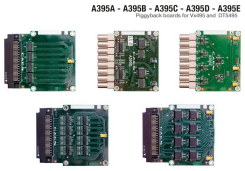
7U 21 Slot VME64 Low Cost Crate

Gallery


CAEN
GENERAL PURPOSE LOGIC UNIT


FPGA USER
ALTERA
Cyclone V
USER PROGRAMMABLE FPGA


V2495 SIDE VIEW


A395A - A395B - A395C - A395D - A395E

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