A1612

16 Channel 500 V/1 mA - 100µA Full Floating Channel Dual Range Board

16	500 V	1mA / 100 µA
No. of Channels	Max Output V	Max Output I

CAEN A1612 is a 5 TE single-width board with 16 independent high-voltage channels, each individually full floating and isolated up to 500 V from other channels and chassis/crate ground. Channels provide 0 ÷ 500 V output with 10 mV monitor resolution, DB37 connectors, and software-selectable dual current ranges: 0 ÷ 1 mA with 1 nA monitor resolution or 0 ÷ 100 µA with 0.1 nA resolution. Independent programming includes 20 nA current-limit steps and 1 ÷ 100 V/s voltage ramps. Protection features include interlock, voltage warnings, overcurrent trip, and hardware VMAX.

CAEN
Tools for Discovery

Overview

Product Highlights

- 6 independently controllable High Voltage channels
- Dual range current:
  - High Power: 1 mA (1 nA monitor resolution)
  - High resolution: 100 µA (0.1 nA monitor resolution)
- Floating Type: Individual Full Floating
- Under/over-voltage alert, overcurrent and max. voltage protection
- Software Tools for easy channel management
- Output voltage:0 ÷ 500 V
- DB37 connectors
- Low ripple
- Interlock logic for unit enable

Product Description

AT A GLANCE	
No. of Channels	**16**
Max Output V	**500 V**
Max Output I	**1mA / 100 µA**
Vset/Vmon Resolution	**10 mV**
Iset/Imon Resolution	**10 / 1 nA**
Max. Ramp Up/Down Rate	**100 V/s**

The CAEN Mod A1612 is a single width board (5 TE wide) that houses 16 independent high voltage channels.

All channels have independent floating returns, isolated up to 500 V from each other and from chassis/crate ground (Individual Full Floating channel). Channels are delivered with **DB37** connectors. Consult our connectors reference page for technical information.

The output voltage range is **0 ÷ 500 V**, with **10 mV** monitor resolution. The output channels offer **dual current ranges** (software selectable):

High Power: 0 ÷ 1 mA	**High Resolution:** 0 ÷ 100 µA
I set resolution: 20 nA	I set resolution: 20 nA
I mon resolution: 1 nA	I mon resolution: 0.1 nA

Independently programmable for each channel:

Output voltage:	0 ÷ 500 V	Step: 10 mV
Current limit (Iset):	0 ÷ 1mA / 100 µA	Step: 20 nA
V Ramp up/down:	1 ÷ 100 V/s	Step: 1 V/s
TRIP parameter:	0 ÷ 999.9 s; 1000 s = Infinite	Step: 0.1 s

Safety features include:

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- **Channels:** can be enabled or disabled through the Global Interlock logic.
- **Overvoltage and Undervoltage warning:** when the output voltage differs from the programmed value.
- **Overcurrent detection:** when a channel attempts to exceed the programmed current limit, it signals an "overcurrent" condition and enters TRIP status. The output voltage is adjusted to keep the current below the programmed limit for a programmable TRIP time, after which the channel is switched off. If TRIP is set to "constant current mode", the channel behaves as a current source.
- **Hardware VMAX:** maximum output voltage can be set, via front panel potentiometer, at the same common value for all the board channels. VMAX value can be read out via software.
- **Safety Board Interlock:** this protection allows to disable the primary HV generation when the HV outputs are not connected to their loads.

CAEN provides a complete software range to control, monitor and configure its Power Supply products.

- **GECO2020 GEneral COntrol Software**
- **CAEN HV Wrapper Library**
- **HiVoCS web tool**
- **OPC Server for CAEN Power Supplies**
- **EPICS Service**

These tools, which support the most used operating systems, ranging from low level libraries (**CAEN HV Wrapper Library**), to be used as a source for customer designed software, to the WEB interface (**HIVOCS**) available on each mainframe, up to the all-inclusive Control Software (**GECO2020**) with user friendly graphical interfaces, to meet any application needs.

Advanced control via OPC Server (**CAEN OPC Server**) and EPICS (**EPICS IOC**) is supported, to easily include CAEN power supplies within existing setups featuring such standards.

- **All tools are available for free download**.

Universal Multichannel Power Supply Systems (Mainframes)

Universal Multichannel Power Supply Systems, or Mainframes, are modular systems designed to house and control High Voltage (HV) and Low Voltage (LV) boards, providing power for particle detectors and their associated electronics in standard 19” racks. CAEN offers four mainframe versions:

- **SY4527:** A large experimental system. This 19” wide / 8U high mainframe can house **up to 16 HV/LV boards**. It offers a power output from 600W up to a maximum of **4200W**, depending on installed Power Supply Units and display type. Local control is optionally available via a 10.4” or 5.7” LCD Touchscreen.
- **SY5527:** A more compact laboratory version. This 19” wide / 4U high mainframe can house **up to 6 HV/LV boards**. Its power output ranges from 600W up to a maximum of **1800W**, depending on Power Supply Units. Optional local control is available via a 5.7” LCD Touchscreen.
- **SY4527LC:** A cost-effective alternative with a shorter depth (~20cm compared to standard SYx527). This 19” wide / 8U high mainframe houses **up to 10 boards** and includes a **600W power supply**. It does not include an LCD display. It is fully compatible with SY4527 and SY5527 boards.
- **SY5527LC:** Also a cost-effective, shorter depth alternative (~20cm compared to standard SYx527). This 19” wide / 4U high mainframe houses **up to 4 boards** and includes a **400W power supply**. It does not include an LCD display. It is fully compatible with SY4527 and SY5527 boards.

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Overview (continued)

All systems offer modular design for simplified upgrades and maintenance and can be controlled remotely via Ethernet.

Technical Specifications

No. of Channels	16 Individual Floating (±500V isolation)
Output Voltage	0 ÷ 500 V
Max Current	Low range: 100 µA High range: 1 mA
Voltage Monitor Resolution	10 mV
Current Set Resolution	20 nA
Current Monitor Resolution	Low range: 100 pA High range: 1 nA
VMAX hardware	0÷500 V common for all the board channels
VMAX hardware accuracy	± 2% of FSR
VMAX software	0÷500 V settable for each channel
VMAX software resolution	1V
Ramp Up/Down	1÷50 Volt/sec, 1 Volt/sec step
Ripple (@ max load with 10nf)	**1 KHz ÷ 20 MHz:** max: <7 mVpp; typical: <5 mVpp **10 Hz ÷ 1KHz:** max: <8 mVpp; typical: <6 mVpp
Voltage Monitor vs Output Voltage	typical: ±0.03 % ±0.05 V maximum: ±0.05 % ±0.1 V
Accuracy Current Monitor vs. Output Current	high range typical: ±0.5 % ±0.5 µA high range maximum: ±1% ±1 µA low range typical: ±0.5% ±0.05 µA low range maximum: ±1% ±0.1 µA
Accuracy Current Set vs. Output Current	high range typical: ±0.5 % ±0.5 µA high range maximum: ±1% ±1 µA low range typical: ±0.5% ±0.05 µA low range maximum: ±1% ±0.1 µA
Output Connector	DB37 Multipin

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Ordering Information

ORDERING CODE	DESCRIPTION
WA1612XAAAAA	A1612 – SYx527 H.V. Channels 500V 1mA – individual Floating (16CH)

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

Related Products

SY4527 — Universal Multichannel Power Supply System / 19”wide, 8U-high (16 slot)

SY4527LC — Universal Multichannel Power Supply System Low Cost / 19”wide, 8U-high (10 slot)

SY5527 — Universal Multichannel Power Supply System / 19”wide, 4U-high (6 slot)

SY5527LC — Universal Multichannel Power Supply System Low Cost / 19”wide, 4U-high (4 slot)

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