AG540

12/24/32 Channel 100 V/1 mA Common Ground Boards

12 / 24 / 32	100 V	1 mA
No. of Channels	Max Output V	Max Output I

The AG540 is a common-ground high-voltage power supply board available with 12, 24 or 32 independently controllable channels. Each channel provides 0 ÷ 100 V output, up to 1 mA, with 1 mV voltage monitor resolution and 1 nA current monitor resolution. Positive, negative or mixed polarity versions use SHV / DB25 connectors. Channels support programmable current limit, voltage ramping and TRIP parameters, with low ripple, interlock logic, over/undervoltage warnings, overcurrent detection and hardware VMAX protection. The board is designed for particle-detector power in modular mainframes.

CAEN
Tools for Discovery

Overview

Product Highlights

- 12 / 24 / 32 independently controllable High Voltage channels
- Maximum output current: 1 mA
- SHV / DB25 connectors
- Low ripple
- Interlock logic for unit enable
- Output voltage: 0 ÷ 100 V
- Available with Negative / Positive / Mixed Polarity
- Floating Type: Common Ground
- Under/over-voltage alert, overcurrent and max. voltage protection
- Software Tools for easy channel management

Product Description

AT A GLANCE	
No. of Channels	**12 / 24 / 32**
Max Output V	**100 V**
Max Output I	**1 mA**
Vset/Vmon Resolution	**10 / 1 mV**
Iset/Imon Resolution	**10 / 1 nA**
Max. Ramp Up/Down Rate	**50 V/s**

The power supplies of the AG540 Family house 12 / 24 / 32 independent high voltage channels.

The channels share a Common Ground, with all output returns hardwired to the chassis/crate ground. The board is available with positive, negative or mixed output polarity. Channels are delivered with **SHV / DB25** connectors. Consult our connectors reference page for technical information.

The output voltage range is **0 ÷ 100 V**, with **1 mV** monitor resolution. The maximum output current is **1 mA**, with **1 nA** monitor resolution.

Independently programmable for each channel:

Output voltage:	0 ÷ 100 V	Step: 10 V
Current limit (Iset):	0 ÷ 1 mA	Step: 10 nA
V Ramp up/down:	1 ÷ 50 V/s	Step: 1 V/sec
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	12 / 24 / 32 (Common Ground)
Output Voltage	0÷100 V
Polarity	Positive / Negative / Mixed depending on purchased version
Max. Output Current	1 mA
Voltage Set Resolution	10 mV
Voltage Monitor Resolution	1 mV
Current Set Resolution	20 nA
Current Monitor Resolution	1 nA
VMAX hardware	0÷100 V common for all the board channels
VMAX hardware accuracy	1 V
VMAX software	0÷100 V settable for each channel
VMAX software resolution	1 V
Ramp Up/Down	1÷50 Volt/sec, 1 Volt/sec step
Voltage Ripple	< 3 mVpp (Typical) < 5 mVpp (Max)
Vmon vs. Vout accuracy	±0.02% ± 50 mV
Vset Vs. Vout accuracy	±0.02% ± 50 mV
Imon vs. Iout accuracy	±2% ± 1 µA
Iset vs. Iout accuracy	±2% ± 1 µA
Maximum output power	0.1 W per channel
Power consumption	AG540: 6.4 W @ full power AG540L, AG540S: 4.8 W @ full power AG540D: 2.4 W @ full power

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Ordering Information

ORDERING CODE	DESCRIPTION
WAG540DXAAAA	AG540DN – SYx527 H.V. channel -100 V 1 mA – SHV Conn. common ground (12 ch)
WAG540DXMAAA	AG540DM – SYx527 H.V. channel (6ch +100V 1mA, 6ch -100V 1mA) – SHV Conn. common ground
WAG540DXPAAA	AG540DP – SYx527 H.V. channel +100 V 1 mA – SHV Conn. common ground (12 ch)
WAG540LXAAAA	AG540LN – SYx527 H.V. channel -100 V 1 mA – Multipin Conn. common ground (24 ch)
WAG540LXPAAA	AG540LP – SYx527 H.V. channel +100 V 1 mA – Multipin Conn. common ground (24 ch)
WAG540SXAAAA	AG540SN – SYx527 H.V. channel -100 V 1 mA – SHV Conn. common ground (24 ch 10TE wide)
WAG540SXMAAA	AG540SM – SYx527 H.V. channel (12ch +100V 1mA, 12ch -100V 1mA) – SHV Conn. common ground
WAG540SXPAAA	AG540SP – SYx527 H.V. channel +100 V 1 mA – SHV Conn. common ground (24 ch 10TE wide)
WAG540XAAAAA	AG540N – SYx527 H.V. channel -100 V 1 mA – Multipin Conn. common ground (32 ch)
WAG540XPAAAA	AG540P – SYx527 H.V. channel +100 V 1 mA – Multipin Conn. common ground (32 ch)

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

Accessories

HV CABLES — High Voltage Cable Assemblies

Related Products

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

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

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

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

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