

## A7030

# 12/24/36/48 Channel 3 kV/1 mA (1.5W) Common Floating Return Boards



## Features



- 12 / 24 / 36 / 48 independently controllable High Voltage channels
- Output voltage: 0 ÷ 3000 V
- Maximum output current: 1 mA
- Available with Negative / Positive Polarity
- Radiall 52 / REDEL 51 / SHV connectors
- **Floating Type:** Common Floating Return
- Low ripple
- Under/over-voltage alert, overcurrent and max. voltage protection
- Interlock logic for unit enable
- Software Tools for easy channel management

## Description

The power supplies of the A7030 Family house 12 / 24 / 36 / 48 independent high voltage channels.

The channels share a Common Floating Return, which is insulated from the chassis/crate ground. This feature may help to minimize problems of ground-loops. The board is available with positive or negative output polarity Channels are delivered with **Radiall 52 / REDEL 51 / SHV** connectors. Consult our **connectors reference page** for technical information.

The output voltage range is **0 ÷ 3000 V**, with **10 mV** monitor resolution. The maximum output current is **1 mA**, with **2 nA** monitor resolution.

Independently programmable for each channel:

<b>Output voltage:</b>	0 ÷ 3000 V	Step: 50 V
<b>Current limit (Iset):</b>	0 ÷ 1 mA	Step: 20 nA
<b>V Ramp up/down:</b>	1 ÷ 500 V/s	Step: 1 V/sec
<b>TRIP parameter:</b>	0 ÷ 999.9 s; 1000 s = Infinite	Step: 0.1 s

Safety features include:

- **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 (Iset), it signals an "overcurrent" condition and enters TRIP status: the channel is switched off after a programmable TRIP time. The output current is permitted to exceed the Iset value; the channel behaves like a current generator only when the IMAX current value is reached.
- **Hardware VMAX and IMAX:** maximum output voltage and maximum current value can be fixed, via front panel potentiometer, at the same common value for all the board channels. IMAX and VMAX values can be read out via software.
- **Safety Board Interlock:** this protection disables the HV generation when the HV outputs are not connected to their loads (only for Multipin Connector versions).

To create cables compatible with versions equipped with Radiall 52 connectors, CAEN provides two accessories: the Mate cable connector (Model A996) and the corresponding insertion/extraction tool (Model A995).

Six A7030 versions are designed for higher altitudes (operating altitude: up to 5000 m):

- 48 channel Radiall/REDEL multipin connector: A7030Y(P/N) / A7030Y(P/N)R
- 24 channel SHV connectors: A7030YS(P/N)

Available as option (**Mod. A7031**) 12 channel 2KV/1mA (2W) – SHV Connector – common floating board

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.

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 / 48 - Common Floating Return
- 12 - Common Floating Return (A7031 Version)

### Output Voltage

- 0÷3 kV
- 0÷2 kV (A7031 version)

### Polarity

Positive / Negative depending on purchased version

### Max. Output Current

1 mA

### Voltage Set Resolution

50 mV

### Voltage Monitor Resolution

10 mV

### Current Set/Monitor Resolution

20 nA

### Current Monitor Resolution

2nA

### VMAX hardware

0÷3 kV common for all the board channels  
0÷2 kV common for all the board channels (A7031 version)

### VMAX hardware accuracy

< ± 1% of FSR

### VMAX software

0÷3 kV settable for each channel  
0÷2 kV settable for each channel (A7031 version)

### VMAX software resolution

1 V

### IMAX hardware

0÷1 mA common for all the board channels

### IMAX software resolution

1  $\mu$ a

### IMAX hardware accuracy

<  $\pm$  1% of FSR

### Ramp Up/Down

1÷500 Volt/sec, 1 Volt/sec step settable for each channel

### Voltage Ripple

10 ÷ 1000 Hz:

- Typ: < 15 mVpp / <10 mVpp (A7031)
- Max: < 20 mVpp / <15 mVpp (A7031)

1 ÷ 20000 kHz:

- < 10 mVpp (Typ)
- < 15 mVpp (Max)

### Voltage Monitor vs. Output Voltage Accuracy

$\pm$  0.3%  $\pm$  2 V

$\pm$  0.06%  $\pm$  1.2 V (A7031)

### Voltage Set vs. Voltage Monitor Accuracy

$\pm$  0.3%  $\pm$  2 V

$\pm$  0.06%  $\pm$  1.2 V (A7031)

### Current Monitor vs. Output Current Accuracy

$\pm$  1%  $\pm$  1  $\mu$ A

$\pm$  0.1%  $\pm$  0.5  $\mu$ A (A7031)

### Maximum output power

1.5 W per channel (A7030 software safety limit)

2 W per channel (A7031 software safety limit)

### Consumption @ full power

- 48 channels (A7030): 160 W
- 36 channels (A7030T): 120 W
- 24 channels (A7030S, A7030L): 90 W
- 12 channels (A7030D): 50 W

## Ordering Options

Code	Description	
WA7030DNXAA1	A7030DN - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - SHV Conn. common floating (12 ch)	RoHS
WA7030DPXAA1	A7030DP - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - SHV Conn. common floating (12 ch)	RoHS
WA7030LNXAA2	A7030LN - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Multipin Conn. common floating (24 ch)	RoHS
WA7030LNXAR2	A7030LNR - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Redel Conn. common floating (24 ch)	RoHS
WA7030LPXAA2	A7030LP - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Multipin Conn. common floating (24 ch)	RoHS
WA7030LPXAR2	A7030LPR - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Redel Conn. common floating (24 ch)	RoHS
WA7030NXAAA4	A7030N - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Multipin Conn. common floating (48 ch)	RoHS
WA7030NXAAR4	A7030NR - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Redel Conn. common floating (48 ch)	RoHS
WA7030PXAAA4	A7030P - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Multipin Conn. common floating (48 ch)	RoHS
WA7030PXAAR4	A7030PR - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Redel Conn. common floating (48 ch)	RoHS
WA7030SNXAA2	A7030SN - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - SHV Conn. common floating (24 ch)	RoHS
WA7030SPXAA2	A7030SP - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - SHV Conn. common floating (24 ch)	RoHS
WA7030TNXAA3	A7030TN - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Multipin Conn. common floating (36 ch)	RoHS
WA7030TNXAR3	A7030TNR - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Redel Conn. common floating (36 ch)	RoHS
WA7030TPXAA3	A7030TP - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Multipin Conn. common floating (36 ch)	RoHS
WA7030TPXAR3	A7030TPR - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Redel Conn. common floating (36 ch)	RoHS
WA7030YNXAA4	A7030YN - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Multipin Conn. common floating (48 ch) High Alt	RoHS
WA7030YNXAR4	A7030YNR - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - Redel Conn. common floating (48 ch) High Alt	RoHS
WA7030YPXAA4	A7030YP - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Multipin Conn. common floating (48 ch) High Alt	RoHS
WA7030YPXAR4	A7030YPR - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - Redel Conn. common floating (48 ch) High Alt	RoHS
WA7030YSNXA2	A7030YSN - SYx527 H.V. channels -3 KV 1 mA (1.5 W) - SHV Conn. common floating (24 ch) High Altitude	RoHS

Code	Description
WA7030YSPXA2	A7030YSP - SYx527 H.V. channels +3 KV 1 mA (1.5 W) - SHV Conn. common floating (24 ch) High Altitude <span data-bbox="1406 197 1485 241">RoHS</span>

## Accessories

### R647



24 Channel Multipin Radiall to SHV connector Adapter (Max: 8 kV - 19" Rack)

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### A648



36-48 Channel Multipin Radiall to SHV connector Adapter (Max: 3 kV - Desktop)

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### A647



24 Channel Multipin Radiall to SHV connector Adapter (Max: 8 kV - Desktop)

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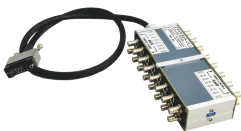
## HV CABLES



High Voltage Cable Assemblies

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### A649B



32 Channel Multipin Radiall to SHV connector Adapter (Max: 8kV - Desktop)

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## R648



48 Channel Radial to SHV connector Adapter (Max: 3 kV - 19' Rack)

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## A995



Insertion/extraction tool for A996

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## A996



52 pin cable connector

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## Related Products

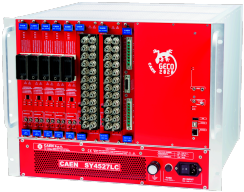
### **SY5527**



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

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### **SY4527LC**



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

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### **SY5527LC**



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

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### **SY4527**



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

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# Gallery



A7030 Family: 12/24/36/48 Channel 3 kV/1 mA (1.5W) Common Floating Return Boards, available with Negative / Positive Polarity, SHV / Radiall 52 / REDEL 51 connectors



Single width (5 TE wide) - Radiall 52-pin, 24/36/48 channel: A7030LP, A7030LN, A7030TP, A7030TN, A7030YN, A7030YP, A7030N, A7030P



Double width (10 TE wide), 24 channel: A7030YSN, A7030YSP



Single width (5 TE wide), 12 channel: A7030SN, A7030SP, A7030DP, A7030DN



Single width (5 TE wide) - REDEL 51-pin, 24/36/48 channel: A7030LPR, A7030LNR, A7030TPR, A7030TNR, A7030YNR, A7030YPR, A7030NR, A7030PR



Radiall multipin connector. (Factory Name: Radiall 691 803 004)



SHV connector. (Factory Name: Radiall R317580)



REDEL multipin connector (Factory Name:  
SLG.H51.LLZG)

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