

N1419

4 Ch Reversible 500 V/200 μ A NIM HV Power Supply Module (USB)



Features



- 4 independent channels in 1U NIM module (2 & 1 channel versions also available)
- 500 V / 200 μ A output range
- Channels with individually selectable positive or negative polarity
- SHV output connectors
- Common floating return
- Low Ripple
- Under/over-voltage alert, overcurrent and max. voltage protection
- Interlock logic for board enable and Individual channel kill
- 5 nA Current monitor resolution (with x10 Imon-Zoom: 500 pA)
- Graphic color display
- Local and Remote control (USB2.0/RS485/RS232)
- Daisy-chain capability
- Optional DC Input Power Equalizer
- Software Tools for easy channel management

Description

The CAEN **Mod. N1419** provides **4** independent High Voltage channels in a single width NIM mechanics. Two and one channel versions (N1419A and N1419B) are also available. Each channel can provide a **±500 V** max voltage, a **200 µA** max current. The output polarity is independently selectable for each channel.

Channels have **common floating return** (common return insulated from the crate ground); HV outputs are delivered through SHV connectors.

The HV output Ramp-up and Ramp-down rates may be selected independently for each channel in the range 1÷50 V/s in 1 V/s steps. The module features 5 nA Iset/Imon resolution. Features include Imon Zoom, increasing resolution to 500 pA.

SHV connector

NIM single width, 4 channels for Mod. N1419, N1419B (1 Ch), N1419A (2 Ch)

Consult our **connectors reference page** for technical information.

Power supply control can be performed either **locally**, assisted by a Graphic color display or **remotely**, via **USB, RS232** or **RS485**, the latter allowing to build a daisy chain network of modules N14XX. It is also controllable via **TCP/IP** by the Smart Fan Unit of CAEN **NIM8301**.

A complete set of **free software Tools** is available to control this unit: **GECO2020** with user friendly GUI and **CAEN HV Wrapper library** for custom SW development. **EPICS** and **LabVIEW** also supported.

Safety features allows the module to perform as a current generator and includes:

Channels	can be enabled or disabled through the Global Interlock logic.
Overvoltage and Undervoltage warning	when the output voltage differs from the programmed value by more than 2% of set value (minimum 1V).
Overcurrent detection	if a channel tries to draw a current larger than its programmed limit, it enters TRIP status, keeping the maximum allowed value for a programmable time (TRIP), before being switched off.
Hardware VMAX	Programmable VMAX protection limit.
Safety Board Interlock	Common Interlock logic for channels enable/disable and individual inputs signal for channel Kill function.

Module control can take place either locally, assisted by a Graphic colour display, or remotely, via USB (1) or RS485 (1). It is also controllable via TCP/IP (2) by the Smart Fan Unit of CAEN NIM 8301 crate:

Special versions available:

- 2 channels version (**N1419A**)
- 1 channel version (**N1419B**)
- 2U NIM module with 220 V/110 Vac plug for desktop operation, equipped with **2.8" Touchscreen, Ethernet and USB interface (NDT1419)**
- 2U NIM module equipped with **2.8" Touchscreen, Ethernet and USB interface (N1419ET)**

Available Options:

- **A1480** DC Input Power Equalizer.

N14xx modules are provided with a USB VCP interface and can be programmed via PC by connecting the PC USB port with the N14xx USB B-type port; the featured controller (FT232BM chip) requires a driver available on **this page** or at **www.ftdichip.com**

Technical Specifications

Packaging

Single width NIM unit

Output channels

4 / 2 / 1 channels, Common Floating Return, SHV connector Positive or Negative Polarity (requires internal setting)

Output ranges

500 V / 200 μ A (IMRANGE = High)
500 V / 20 μ A (IMRANGE = Low) - Imon Zoom Active

Max. Ch. Output Power

100 mW

Vset Resolution

10 mV

Vmon Resolution

10 mV

Iset Resolution

5 nA

Imon Resolution

5 nA
500 pA (IMRANGE = High)
(IMRANGE = Low) - Imon Zoom
Active

Vmax

0 ÷ 510 V Absolute maximum HV level that the channel is allowed to reach, independently from the preset value Vset.
Output voltage cannot exceed the preset value Vmax. The accuracy is 1 % \pm 0.5 V

Vmax resolution

\pm 0.1 V

Ramp Up/Down

1 ÷ 50 Volt/s, 1 Volt/s step

Trip

- Max. time an “overcurrent” can last (seconds). A channel in “overcurrent” works as a current generator; output voltage varies in order to keep the output current lower than the programmed value.
- “Overcurrent” lasting more than set value (1 to 9999) causes the channel to “trip”.
- Output voltage will drop to zero either at the Ramp-down rate or at the fastest available rate, depending on Power Down setting; in both cases the channel is put in the OFF state.
- Trip range: 0 ÷ 999.9 s; 1000 s = INFINITE. Step = 0.1 s (If trip= INFINITE, “overcurrent” lasts indefinitely)

Voltage Ripple

- 20 ÷ 1000 Hz: Typical: 5 mVpp / Maximum: 10 mVpp
- 1 ÷ 20000 kHz: Typical: 3 mVpp / Maximum: 5 mVpp

Vmon vs. Vout Accuracy

±0.02% of read value ±500 mV

Vset vs. Vout Accuracy

±0.02% of read value ±500 mV

Imon vs. Iout Accuracy

±2% of read value ±20 nA (IMRANGE = High)
±2% of read value ±2 nA (IMRANGE = Low) - Imon Zoom Active

Iset vs. Iout Accuracy

±2% of read value ±30 nA (IMRANGE = High)
±2% of read value ±3 nA (IMRANGE = Low) - Imon Zoom Active

Humidity range

0 ÷ 80%

Operating temperature

0 ÷ 45°C

Storage temperature

-10 ÷ 70°C

Vout / Temperature coefficient

max. 50 ppm / °C

Imon / Temperature coefficient

max 100 ppm / C°; max 300 ppm / C° with Imon zoom

Long term stability Vout vs. Vset

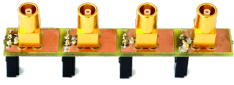
± 0.02% (after one week @ constant temperature)

Ordering Options

Code	Description	
WN1419AXAAAA	N1419A - 2 Ch NIM Programmable HV Power Supply ($\pm 500V$, 200 μA , 5nA res.)	RoHS
WN1419BXAAAA	N1419B - 1 Ch NIM Programmable HV Power Supply ($\pm 500V$, 200 μA , 5nA res.)	RoHS
WN1419XAAAAA	N1419 - 4Ch NIM Programmable HV Power Supply ($\pm 500V$, 200 μA , 5nA res.)	RoHS

Accessories

A1481



Kill Signal Adapter for N14XX series

A148x



Inhibit - Kill Signal BNC Adapter for HV Power Supply Modules

A1483

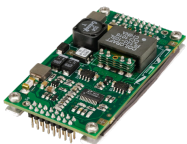
Inhibit - Kill Signal BNC Adapter for HV Power Supply Modules

HV CABLES



High Voltage Cable Assemblies

A1480



DC Power Input Equalizer for N14XX Family

Inhibit - Kill Signal BNC Adapter for HV Power Supply Modules

Related Software

GECO2020



General Control Software for CAEN HV Power Supplies

Related Software Libraries

CAEN HV Wrapper Library



Library for CAEN Power Supply Control

Related Products

NIM8303



5U 12 slot 300/600 W Crate

LabVIEW Driver (PSM - Power Supply Modules)



LabVIEW Instrument Driver for Power Supply Modules

NIM8304



7U 12 slot smart fan unit Switching 2000 W Crate

NV8020A



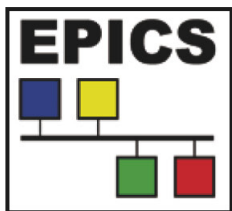
7U CRATE VME/NIM 8 slot VME64 365W, 5 slot NIM 150W

NIM8305



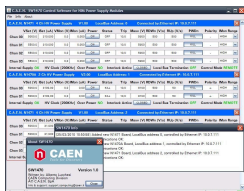
2 Slot Switching 450 W Mini Crate

EPICS IOC (PSM Power Supply Modules)



EPICS IOC for Power Supply Modules

SW1470



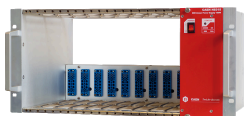
Control Software for NIM Power Supply Modules

NIM8306



2 Slot Switching 750 W Mini Crate

NIM8302



5U 10 slot 150 W Compact Crate

Gallery

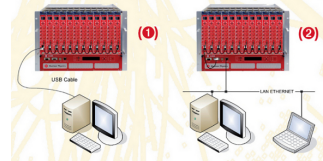


**Voltage & Current
analogue monitor
HV-ON LED**



**New innovative local
control:** encoder and
colour display will
make the setting
easier than ever!

Module control can take place either locally, assisted by a Graphic colour display, or remotely, via USB (1) or RS485 (2). It is also controllable via TCP/IP (2) by the Smart Fan Unit of CAEN NIM 8301 crate



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