NDT1470

4 Ch Reversible 8 kV/3 mA (8 W) NIM/Desktop HV Power Supply Module (USB/Ethernet/T.screen)

4	±8000 V	3 mA
No. of Channels	Max Output V	Max Output I

NDT1470 is a four-channel reversible high-voltage power supply in a double-width 2U NIM module, also suitable for desktop operation from 110/220 V AC. Each independently controlled channel delivers up to ±8 kV and 3 mA, with 9 W maximum below ±3 kV and 8 W above ±3 kV. Polarity is selectable per channel; outputs use SHV connectors with a common floating return. Ramp rates are programmable from 1 to 500 V/s, while current monitor resolution is 50 nA or 5 nA with x10 Imon Zoom. Local control uses a 2.8″ touchscreen; USB 2.0 and Ethernet provide remote operation.

CAEN
Tools for Discovery

Overview

Product Highlights

- 4 independent channels in 2U NIM module
- 8 kV / 3mA output range
- Channels with individually selectable positive or negative polarity
- Common floating return
- Under/over-voltage alert, overcurrent and max. voltage protection
- 50 nA Current monitor resolution (with x10 Imon-Zoom: 5 nA)
- Local and Remote control (USB2.0/Ethernet)
- Software Tools for easy channel management
- 220 V/110 V AC plug for desktop operation
- Max output power:
  - 9 W (<3 kV output)
  - 8 W (>3 kV output)
- SHV coaxial output connectors
- Low Ripple
- Interlock logic for board enable and Individual channel kill
- 2.8″ color touch screen display
- Daisy-chain capability

Product Description

AT A GLANCE	
No. of Channels	**4**
Max Output V	**±8000 V**
Max Output I	**3 mA**
Vset/Vmon Resolution	**0.2 V**
Iset/Imon Resolution	**Iset: 50 nA Imon: 50 / 5 nA**
Max. Ramp Up/Down Rate	**500 V/s**

The CAEN **Mod. NDT1470** provides **4** independent high voltage channels in a double-width NIM module. It also supports desktop operation (110/220 V AC powered), with no need for a NIM crate. Each channel delivers up to **±8 kV** and **3 mA**, with a maximum output power of 9 W, reduced to 8 W when the output voltage exceeds ±3 kV. The output polarity of each channel can be selected independently.

The channels share a common floating return, insulated from the crate ground. The Mod. NDT1470 is housed in a double-width NIM module and delivers its 4 HV outputs through SHV connectors; for further technical information, consult our connectors reference page. Ramp-up and ramp-down rates can be set independently for each channel from 1 to 500 V/s in 1 V/s steps. The module offers 50 nA Iset/Imon resolution, and the x10 Imon Zoom increases the current monitor resolution to 5 nA.

The module can be controlled **locally**, through a **2.8″ color touchscreen LCD display** with a completely redesigned user interface, or **remotely** via **USB 2.0** or **Ethernet**.

A complete set of **free software tools** is available to control the unit: GECO2020, with a user-friendly GUI, and the CAEN HV Wrapper library for custom software development. EPICS and LabVIEW are also supported.

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Overview (continued)

The module also includes dedicated safety features that allow it to operate as a current generator. An overvoltage and undervoltage warning is issued when the output voltage differs from the programmed value by more than 2% of the set value (minimum 10 V). If a channel attempts to draw a current higher than its programmed limit, it enters TRIP status and holds the maximum allowed value for a programmable time (TRIP) before being switched off. A programmable VMAX protection limit is also available. Finally, a common safety board interlock logic enables or disables the channels, while individual input signals provide a kill function for each channel.

Technical Specifications

Package	Double width NIM mechanics. Weight: ~2.6 kg
Output channels	4 channels, Common Floating Return, SHV connector Positive or Negative Polarity (requires internal setting)
Output ranges	8 kV / 3 mA (IMonRange = High) 8 kV / 300 µA (IMonRange = Low) – Imon Zoom Active
Max. Ch. Output Power	9 W (Vset < 3 kV) 8 W (Vset > 3 kV)
Vset Resolution	200 mV
Vmon Resolution	200 mV
Iset Resolution	50 nA
Iset / Imon Resolution	50 nA (IMonRange = High) 5 nA (IMonRange = Low) – Imon Zoom Active
Vmax	0 ÷ 8100 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 % ± 5 V
Vmax resolution	± 1 V
Alarm output	Open collector, 100 mA maximum sink current
Interlock input	LOW: < 1 V; current~5mA; HIGH: 4÷6 V
Ramp Up/Down	1÷500 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:
- 3kV/200µA. Typical: 20 mVpp / Maximum: 25 mVpp
- 3kV/3mA. Typical: 20 mVpp / Maximum: 30 mVpp
- 8kV/800µA. Typical: 25 mVpp / Maximum: 30 mVpp

1 ÷ 20000 kHz:
- 3kV/200µA. Maximum: 10 mVpp
- 3kV/3mA. Typical: 5 mVpp / Maximum: 10 mVpp
- 8kV/800µA. Typical: 10 mVpp / Maximum: 15 mVpp

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Technical Specifications (continued)

Vmon vs. Vout Accuracy	:±0.02% of read value ±2V
Vset vs. Vout Accuracy	±0.02% of read value ±2V
Imon vs. Iout Accuracy	±2% of read value ±2 µA (IMonRange = High) ±2% of read value ±200 nA (IMonRange = Low) – Imon Zoom Active
Iset vs. Iout Accuracy	±2% of read value ±2 µA (IMonRange = High) ±2% of read value ±200 nA (IMonRange = Low) – Imon Zoom Active
Cooling Fan	2 Sunon 60 x 60 x 15 mm; 12V KDE1206PHV1 and 2 Mouser 40x40x20 mm; 12V 1608KL-04W-B50-L00
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 X10 zoom
Long term stability Vout vs. Vset	± 0.02% (after one week @ constant temperature)

Ordering Information

ORDERING CODE	DESCRIPTION
WNDT1470AAAA	NDT1470 – 4Ch NIM/Desktop Programmable HV Power Supply (±8kV, 3mA, 50nA res.)

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

Accessories

A148x — Inhibit - Kill Signal BNC Adapter for HV Power Supply Modules

HV CABLES — High Voltage Cable Assemblies

Related Products

NIM8302 — 5U 10 slot 150 W Compact Crate

NIM8303 — 5U 12 slot 300/600 W Crate

NIM8304 — 7U 12 slot smart fan unit Switching 2000 W Crate

NIM8305 — 2 Slot Switching 450 W Mini Crate

NIM8306 — 2 Slot Switching 750 W Mini Crate

NV8020A — 7U CRATE VME/NIM 8 slot VME64 365W, 5 slot NIM 150W

Software & Control Tools

CAEN HV Wrapper Library — Library for CAEN Power Supply Control

GECO2020 — GEneral COntrol Software for CAEN HV Power Supplies

LabVIEW Driver (PSM – Power Supply Modules) — LabVIEW Instrument Driver for Power Supply Modules

SW1470 — Control Software for NIM Power Supply Modules