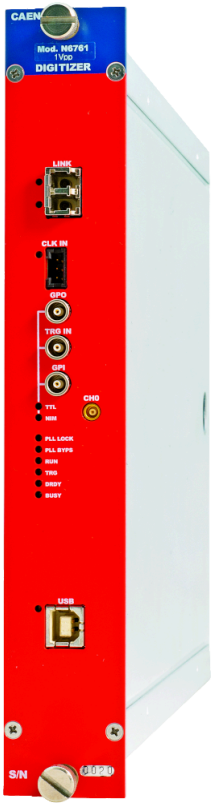
N6761

1 Channel 10 bit 4 GS/s Digitizer

Features



- 10 bit @ 4 GS/s
- Analog input on MCX coaxial connector (50 Ω, single ended)
- 1 channel, Desktop module
- 1 Vpp input dynamic range with programmable DC offset adjustment
- Time-stamped Waveform Recorder
- Memory buffer: 7.2 MS/ch
- Programmable event size and post-trigger adjustment
- USB and Optical Link communication interfaces
- Multi-board synchronization features
- Daisy chain capability
- Compliant with CAEN WaveDump, C and LabVIEW Libraries

Description

The **N6761** is the CAEN **Waveform Digitizer** with the **highest sampling rate** Flash ADC (**10 bit @ 4GS/s**).

It can record **fast signals** from fast organic, inorganic and liquid scintillators coupled to PMTs or Silicon Photomultipliers, Diamond detectors and others, and save them with high efficiency and precision for offline advanced timing analysis. The acquisition can be externally vetoed/gated. Multiple boards can be synchronized to build up complex systems.

The data stream is written in a circular memory buffer with independent read/write access, which reduces the dead-time of the acquisition process.

The acquisition is fully controlled by **CAEN WaveDump** software, which manages the settings, plots and saves the waveforms. Libraries and demo software in C and LabView are available for integration and customization of specific acquisition systems.

The N6761 comes in a **NIM** form factor with 1 input channel. The communication to and from the board is provided through **USB** and **Optical Link** interfaces.

Technical Specifications

GENERAL

Form Factor: 1-unit wide NIM

ANALOG INPUT

- Channels: 1 channel single ended
- Impedance: 50 Ω
- Connector: MCX
- Full-Scale Range: 1 Vpp
- Bandwidth: 1 GHz
- Offset: Programmable DAC for DC offset adjustment in the full-scale range

DIGITAL CONVERSION

- Resolution: 10 bits
- Sampling Rate: 1 GS/s

ADC Clock Generation

- Clock source: internal/external
- Onboard programmable PLL provides generation of the main board clocks from an **internal** (50 MHz local Oscillator) or **external** (front panel CLK-IN connector) reference

DIGITAL I/O

CLK-IN (AMP Modu II)
AC coupled differential input clock LVDS, ECL, PECL, LVPECL, CML (single ended NIM/TTL available by CAEN adapter)
Jitter <100 ppm requested

GPO (LEMO)
General purpose digital output
NIM/TTL, Rt = 50 Ω

GPI (LEMO)
General purpose digital input
NIM/TTL, Zin = 50 Ω

TRG-IN (LEMO)
External trigger digital input
NIM/TTL, Zin = 50 Ω

ACQUISITION MEMORY

- 7.2 MS/ch (1.9 ms @ 4 GS/s) or 57.6 MS/ch (15 ms @ 4 GS/s) Multi-event Buffer divisible into 1 ÷ 1024 buffers
- Independent read and write access
- Programmable event size and pre/post-trigger

TRIGGER

Trigger Source
Self-trigger: channel over/under threshold for Common trigger generation
External-trigger: Common by TRG-IN connector
Software-trigger: Common by software command

Trigger Time Stamp
Waveform Recording: 31-bit counter, 16 ns resolution, 17 s range; 48-bit extension by firmware

Trigger Propagation
GPO digital output

SYNCHRONIZATION

Clock Propagation
One-to-many: clock distribution from **DT4700** to CLK-IN connector

Acquisition Synchronization
Sync Start/Stop through digital I/O (TRG-IN input, GPO output)

Trigger Time Stamp Alignment
By GPI input connector

ADC & Memory Controller FPGA

Two Altera Cyclone III EP3C16

COMMUNICATION INTERFACE

USB: USB 2.0 compliant Transfer rate up to 30 MB/s
Optical Link: CAEN CONET proprietary protocol, up to 80 MB/s transfer rate
Daisy chainable: it is possible to connect up to 8/32 ADC modules to a single Optical Link Controller (Mod.A2818/A3818)

FIRMWARE

Waveform Recording Firmware: Free firmware for waveform recording
Upgrades: Firmware can be upgraded via Optical Link or USB

SOFTWARE

Libraries: General purpose C and LabVIEW Libraries
Readout Software: CAEN WaveDump
Configuration Tools: CAEN Upgrader for Firmware upgrade, Direct Register R/W (Example codes)

POWER CONSUMPTIONS

3.9 A @ +6 V
120 mA @ -6 V

Accessories

A654

Cable assembly LEMO 00 male to MCX male – 1 m

A659

Cable assembly BNC male to MCX male – 1 m

AI2700

Optical Fiber Series

A318

Adapter for Clock signal FISCHER S101A004 male to 3-pin AMPMODU IV female – 10 cm

A317

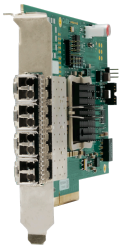
Cable assembly for Clock distribution 3-pin AMPMODU IV female terminations – 18 cm / 25cm

Related Products

NIM8305

2 Slot Switching 450 W Mini Crate

A5818



CONET2 Controller based on PCI Express Gen 3 interface

NIM8303

5U 12 slot 300/600 W Crate

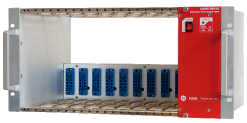
NV8020A

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

NIM8306

2 Slot Switching 750 W Mini Crate

NIM8302



5U 10 slot 150 W Compact Crate

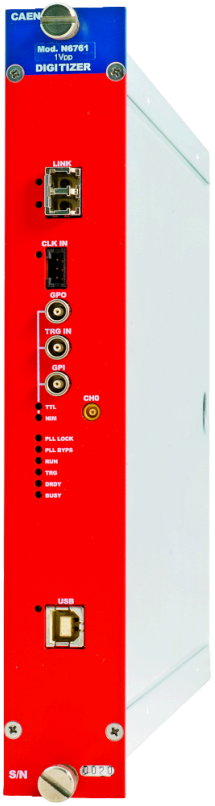
A4818

USB 3.0 to CONET2 Adapter

NIM8304

7U 12 slot smart fan unit Switching 2000 W Crate

Gallery


CAEN
Mod. N6761
1 Vpp
DIGITIZER
LINK
CLK IN
GPO
TRG IN
GPI
CHD
TTL
NIM
PLL LOCK
PLL SYNS
RUN
TRG
DRDY
BUSY
USB
S/N

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