N6761

1 Channel 10 bit 4 GS/s Digitizer

OBSOLETE

The N6761 is a one-channel, 10-bit, 4 GS/s waveform digitizer in a desktop NIM module. Its 50 Ω single-ended analog input uses an MCX connector and provides a 1 Vpp dynamic range with programmable DC offset adjustment. A 7.2 MS/ch memory buffer supports programmable event size, post-trigger adjustment and time-stamped waveform recording. USB and Optical Link interfaces, multi-board synchronization and daisy-chain capability support complex acquisition systems. It is suited to recording fast signals from scintillators, PMTs, silicon photomultipliers and diamond detectors for offline timing analysis.

CAEN
Tools for Discovery

Overview

Product Highlights

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

Product 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.

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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

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Technical Specifications (continued)

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

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Technical Specifications (continued)

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

Ordering Information

ORDERING CODE	DESCRIPTION	STATUS
WN6761XAAAAA	N6761 – 1 Ch. 10 bit 4 GS/s Digitizer: 7.2Ms/ch, EP3C16, SE	Obsolete

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

Accessories

A317 — Cable assembly for Clock distribution 3-pin AMPMODU IV female terminations – 18 cm / 25cm

A318 — Adapter for Clock signal FISCHER S101A004 male to 3-pin AMPMODU IV female – 10 cm

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

Related Products

A4818 — USB 3.0 to CONET2 Adapter

A5818 — CONET2 Controller based on PCI Express Gen 3 interface

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

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