N842

8 Channel Constant Fraction Discriminator

NIM	8	Const. Fraction
Package	No. of Channels	Function

The CAEN N842 is an 8-channel constant-fraction discriminator in a one-unit-wide NIM module. It accepts eight negative inputs and provides 2×8 NIM outputs with fan-out of two, plus eight negated outputs on front-panel LEMO 00 connectors. Individual thresholds are programmable from -1 mV to -255 mV in 1 mV steps via 8-bit DACs; output width is adjustable from 15 ns to 245 ns, with programmable dead time. Constant-fraction delay ranges include 8 ÷ 20 ns, with optional 4 ÷ 5 ns, 10 ÷ 50 ns and 20 ÷ 100 ns settings. TEST, VETO, OR and Current Sum outputs are provided.

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Overview

Product Highlights

- Individually programmable thresholds
- Programmable output width
- Programmable dead time
- TEST and VETO inputs
- OR and Current sum outputs
- 4 digit Led display

Product Description

AT A GLANCE	
Package	**NIM**
No. of Channels	**8**
Function	**Const. Fraction**
Updating	**No**
Min Input (mV)	**-5**
Output Width (ns)	**15 ÷ 245**

The CAEN **Mod.N842** is an **8 Channel Constant Fraction Discriminator** housed in a one unit wide NIM module. The module accepts 8 negative inputs and produces **2x8 NIM outputs** (NIM outputs are provided with a fan-out of two)+ **8 /NIM outputs** (negated) on front panel LEMO 00 connectors.

The constant fraction delay is **20ns full scale** with 4 ns steps (8 ÷ 20 ns operating range), optionally are also available:

- **5 ns** full scale with **1 ns** steps (4 ÷ 5 ns operating range)
- **50 ns** full scale with **10 ns** steps (10 ÷ 50 ns operating range)
- **100 ns** full scale with **20 ns** steps (20 ÷ 100 ns operating range)

The timing stage of the discriminator produces an output pulse whose width is adjustable in a range from 15 ns to 245 ns. Moreover, in order to protect against multiple pulsing, it is possible to program a dead time during which the discriminator is inhibited from retriggering.

The maximum time walk is **±400 ps** (for input signals in the range from -50 mV to -5 V with 25 ns rise time). The constant fraction is **20%**. The individual discriminating thresholds are settable in a range from -1 mV to -255 mV (1 mV step) via an 8-bit DAC.
The module can operate also with **small (below 10 mV) input signals**, though in this case the Constant Fraction operation is not performed, i.e. the time walk is higher. The channels' threshold, output width and dead time can be programmed via two switches and one rotary handle placed on the front panel.

The back panel houses VETO and TEST inputs, the OR output and the Current Sum output, which generates a current proportional to the input multiplicity, i. e. to the number of channels over threshold, at a rate of -1.0 mA per hit (-50 mV per hit into a 50 Ω load) ±20%.

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Technical Specifications

Packaging	1U-wide NIM unit
Input Channels	8 inputs (negative polarity, 50 Ω impedance)
Max input voltage	-5 V
Threshold range	-1 mV to -255 mV (1 mV step)
Constant fraction	0,2

Delay

20 ns full scale with 4 ns steps (8 ÷ 20 ns operating range)

Optional:

- 5 ns full scale with 1ns steps (4 ÷ 5 ns operating range)
- 50 ns full scale with 10ns steps (10 ÷ 50 ns operating range)
- 100 ns full scale with 20ns steps (20 ÷ 100 ns operating range)

Output Channels	8×3 NIM (1 pair bridged 1 complementary)
Input/output delay	Set delay + 6.5 ns ± 3 ns
Output width	Programmable from 15 ns to 245 ns (typical values)
Dead Time	Programmable from 137 ns to 1865 ns (typical values)
Interchannel insulation	60 dB for 2.5 ns rise time input signals
Max outputs time walk	±400 ps for input signals in the range from -50 mV to – 5 V with 25 ns rise time
Autowalk	Automatic adjustment to input offset and low frequency input noise of ±40 mV
Test Input	NIM logic signal, hiigh impedance Min. FWHM: 5 ns Max. frequency: 30 MHz
Veto Input	NIM logic signal, high impedance Min. FWHM: 15 ns
OR Output	NIM logic signal
Current Sum Output	Current proportional to input multiplicity (-1 mA ± 20% per hit), high impedance

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Ordering Information

ORDERING CODE	DESCRIPTION
WN842XAAAAAA	N842 – 8 Channel Constant Frac. Discriminator(Delay 20 ns; F = 20%)

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

Accessories

A385 — Adapter 2.54mm 34-pin female to 16x LEMO 00 female (or MCX male) – 50 cm / 1 m

Related Products

NIM8302 — 5U 10 slot 150 W Compact Crate

NIM8303 — 5U 12 slot 300/600 W Crate

NIM8305 — 2 Slot Switching 450 W Mini Crate

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

NIM8302P — 5U 5 slot 150 W Portable Crate

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

NIM8306 — 2 Slot Switching 750 W Mini Crate

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