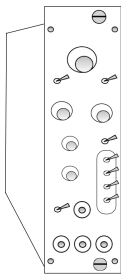# NIM Random Pulse Generator

BNC

B N C model D B – 2

M O D E L D B – 2

- Random and Repetitive Modes
- Count Rate 10 Hz to 1 MHz
- Amplitude Shift With Count Rate Less Than +/– 0.05%
- Independently Adjustable Rise and Fall Times

SPECIFICATIONS

|	
Count Rate	10 Hz to 1 MHz, continuously adjustable
Mode	Random or Repetitive
Random Distribution	Poisson for intervals greater than 1.4 µs
Pulse Shape	Tail pulse with independently adjustable rise and fall times
Pulse Amplitude (STEP) Characteristics	a) Amplitude Shift with Count Rate: Less than +/- 0.05% from 10 Hz to 100 KHz b) Jitter (resolution): 0.01% RMS c) Temperature Coefficient: +/- 0.02%/°C
Frequency Jitter (Repetitive Mode)	Less than 0.1%
External Trigger	Requires 1 V positive pulse. Input impedance 1 K.
Trigger Out	Positive 3 V pulse, 20 ns rise time, 100 ns width, 50 Ω output impedance.
Rise Time of Output (10-90%)	0.1-20 µs in 8 steps.
Decay Time Constant (100-37%)	5-1000 µs, in 8 steps. Rise and Decay time independent of each other for Decay Time/ Rise Time > 10.
Output Amplitude Ranges	Repetitive only; +/- 10 V max Repetitive or Random, +/- 1 V max, from 50 Ω source. Adjustable by ten-turn potentiometer from zero to maximum.
Normalize	Ten-turn control varies amplitude by 60%
Output Impedance	50 Ω
Attenuation	4 step attenuators of X2, X5, X10 and X10 for a maximum of X1000
External Reference Input	+10 V max; 10k input impedance
Power Requirements	+/- 24 V at 65 mA, +12V at 140 mA, -12 V at 40 mA
Mechanical	Double-width NIM module; 2.70" wide by 8.70" high in accordance with TID-20893 (Rev. 3)
Weight	3.5 lbs. net; 7 lbs. shipping

The Model DB-2 is a pulse generator which accurately simulates the random and pileup characteristics of pulses from a radiation detector. It provides pulse which are mono-energetic over a broad range of average count rates.

Under high count rate conditions, the pulses will pile-up as shown in the diagram below. This characteristics is useful in determining pile-up or count-rate effects and in measuring the resolution of high count rate spectroscopy systems.

Besides random pulse, the Model DB-2 also provides mono-energetic repetitive pulses. In this mode, the DB-2 is an excellent general purpose pulser. When the EXT REF input is used with an external ramp, the DB-2 provides sliding pulses to quickly check system or component linearity.
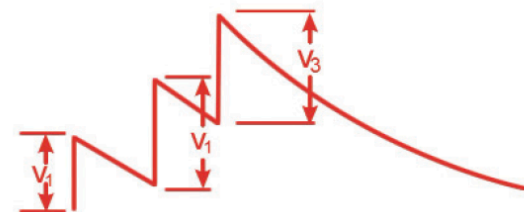
Monoenergetic Piled-up Random Pulses
Mono-energetic Piled-up Random Pules