DB 2100-H
Low attenuation delay box

- Delays fast-timing signals in steps of 100 ns
- Low attenuation of ultra-fast signals
- 50 Ω input/output impedance for linear or logic signals

The GFE Model **DB 2100-H** Low attenuation delay box provides a calibrated time delay for any type of signal in 100 ns steps. Longer delays can be obtained by cascading several Model **DB 2100-H**. The delay is accomplished by low attenuation UR67 coaxial cables suitable for ultra-fast signals. No power is required to operate the unit.

The Model **DB 2100-H** has many applications. For example, it can be used to delay ultra-fast analogue signals without compromising the signal shape. It is also suitable to accurately delay digital logic signals with low attenuation over long delay times.

The input and output impedance of the Model **DB 2100-H** is 50 Ω, making it fully compatible with related signal sources and loads in other NIM-standard modular nuclear instruments.

Specifications

Performance

Delay accuracy	±1 ns.
Minimum delay	100 ns.

Inputs

BNC connector accepts signal of either polarity to ±600 V maximum; impedance, 50 Ω.

Output

BNC connector furnishes input signals; impedance 50 Ω.

Electrical and mechanical

Power required	none
Weight	10.0 kg.
Dimensions	Standard 19” 2U housing

Description

The cable used in the **DB 2100-H** (UR67-5603-AZZD, Alcatel), is designed specifically for very fast pulses. The characteristic attenuation for different frequencies is presented in table 1.

Table1. *Attenuation for different frequencies.*

	100 MHz	200 MHz	300 MHz	600 MHz	1000 MHz
Attenuation (dB/100m)	6.8	9.9	12.5	18.6	25.2

A comparison between a conventional delay box utilizing cable RG-58A/U and the novel **DB 2100-H** (UR67-5603-AZZD, Alcatel) is presented in figure 1a and 1b. The first one shows the original pulse from an ultra-fast scintillation detector (yellow) and the same pulse after 200 ns standard delay (blue). It is obvious that the amplitude of the signal is severely attenuated and the rise time of the signal is significantly degraded.

The second figure (1b) shows the same comparison for the **DB 2100-H** low attenuation delay box. It can be seen that the delayed signal keeps the original shape and stays almost un-attenuated.

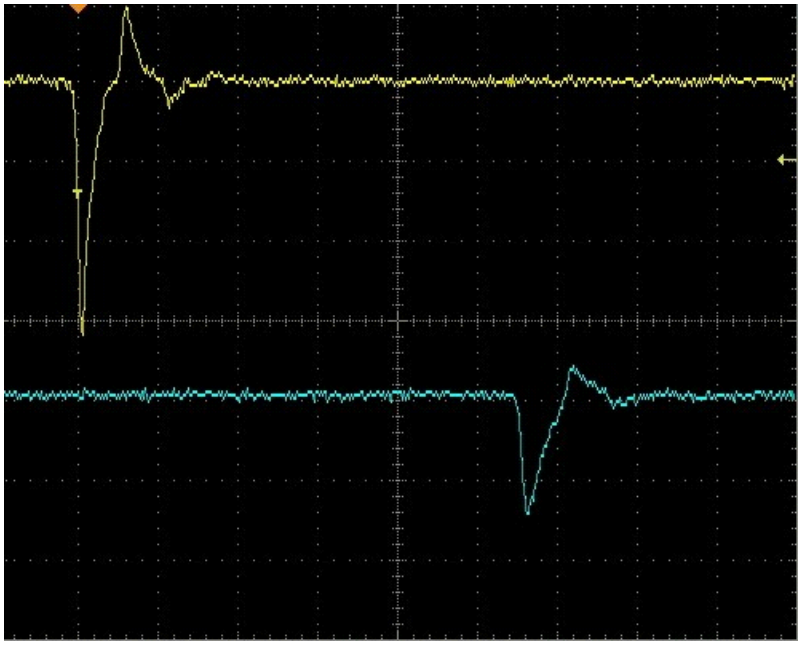

Fig.1a. Comparison of the pulse from an ultra-fast scintillation detector (yellow) and the same pulse after 200 ns standard delay (blue).

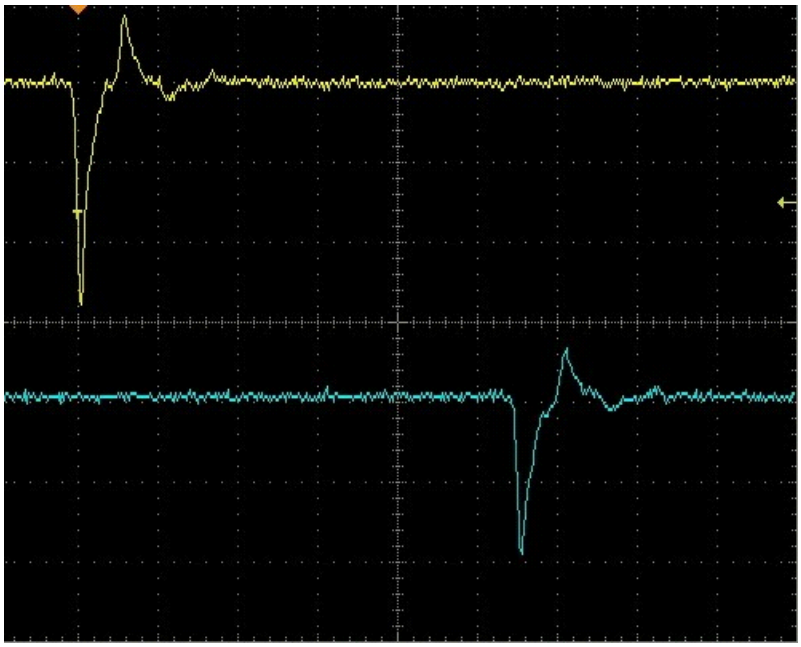

Fig.1b. Comparison of the pulse from an ultra-fast scintillation detector (yellow) and the same pulse after 200 ns **DB 2100-H** delay (blue).