

Model BL-2 Fast Tail Pulse Generator



Features

- 5 ns Minimum Width
- 3 ns Minimum Rise Time
- Double Pulse Capability
- Adjustable Rise and Decay Times
- Repetition Rates up to 50 MHz

The Model BL-2 is a versatile, tail pulse generator capable of simulating the outputs from a wide range of detectors, photo-multiplier tubes, and related electronics. It offers good linearity and stability, and fast, narrow pulse capability. Having a broad range of rise and decay times, the Model BL-2 can simulate the shorter pulses of plastic scintillators and lead glassas well as the longer pulses of NaI, many liquid scintillators, and amplifier outputs. The Model BL-2 enables the user to check electronics for linearity, resolution, rise time effects, count rate effects, and overload effects. Of particular interest to those that wish to check pulse pair resolution and count rate effects is that the BL-2 can operate in a double-pulse mode, with a pair of pulses having an adjustable separation that can be as low as 10 ns. Since repetition rates are variable to 50 MHz, a 100 MHz repetition rate is possible by double pulsing. The high repetition rates enable the user to quickly accumulate the large number of counts needed for good statistics.

Other features include an:

- External Reference input, where an incoming signal controls the output pulse amplitude
- External Trigger mode, where an incoming pulse triggers an output pulse
- External Drive mode, where an incoming pulse controls both output pulse width and timing.

Specifications

Internal: 10 Hz to 50 MHz, continuously adjustable with coarse and fine controls. External Trigger: 1 V positive pulse triggers a pulse (single or double), with internal delay and width controls operative.

External Drive: 1 V positive pulse generates an output pulse with a width equal to the width of the incoming pulse, internal delay and width controls are inoperative. Single Cycle: One pulse occurs each time the pushbutton is depressed. **Delay**

10 ns - 10 ms, continuously adjustable with coarse and fine controls. **Single/Double Pulse**

In the single-pulse mode, a single output pulse occurs which is delayed from the Trigger Out by an amount determined by the Delay controls.

In the double-pulse mode, two equal width output pulses occur. The first pulse occurs when the Trigger Out does, the second pulse is delayed from the first by an amount determined by the Delay controls.

Width

5 ns - 5 ms, continuously adjustable with coarse and fine controls.

Flat Top/Tail Pulse: Toggle switch selects the output pulse shape. The width controls are functional only in the flat top mode.

Trigger Input/Drive

Positive 1 V pulse, 50 ohms input impedance, +/-5 V maximum input.

Trigger Out

Positive 3 V pulse, 10 ns rise time, 50 ohms output impedance.

Output Amplitude

Flat Top

0.0 V to 2 V into 50 ohms, 0.0 V to 4 V into high impedance, continuously adjustable with ten-turn potentiometer. 50 ohms source impedance.

Tail Pulse

0.01 V to 1.5 V into 50 ohms, 0.0 V to 3 V into high impedance, continuously adjustable with ten-turn potentiometer. 50 ohms source impedance.

Amplitude Characteristics

Temperature stability: less than 1% variation from 0-50° C.

Duty cycle variations: less than 1% up to 90% duty factor.

Linearity: less than 1% integral nonlinearity.

Normalize

Multi-turn potentiometer will vary the amplitude up to 50%.

Polarity

Simultaneous positive and negative pulses are available.

Internal/External Reference

With Internal Reference, the output pulse amplitude is controlled only by the Amplitude and Normalize controls.

With External Reference, an applied positive level controls the output pulse amplitude.

Input: +5 V max, 5 k input impedance.

Rise Time (10-90%)

Tail Pulse: 3 ns to 250 ns in six steps.

Flat Top: 4 ns to 250 ns in six steps.

Decay Time Constant (100-37%)

5 ns to 10 us in eight steps.

Power Requirements

+ 12 V at 500 mA, - 12 V at 400 mA

+ 6 V at 80 mA, -6 V at 425 mA.

(For power, see Model AP-3 or AP-2H Power Supply.)

Mechanical

Triple-width NIM module, 4.05" wide by 8.70" high in accordance with TID-20893 (Rev.3).

Weight

4.5 lbs., (2 kg) net; 7.0 lbs. (3.2 kg) shipping.