

Phillips Scientific

CF Timing Discriminator

MODEL 6915

FEATURES

- * Unexcelled Timing Characteristics
- * 100 MHz Operation
- * Small Rugged Enclosure
- * Fast Veto For Inhibiting

DESCRIPTION

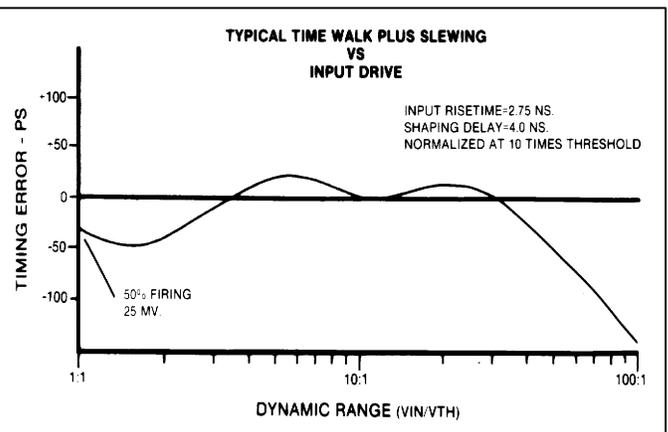
The Model 6915 is a high performance, single channel constant-fraction timing discriminator. Its small rugged packaging makes it ideal for mounting nearby the detector often in remote locations.

Typical time walk plus input slewing of ± 75 pSec is achieved for inputs from threshold to 100 times threshold. The threshold is adjustable from -25 mV to -1 Volt, and its setting is easily monitored from a front panel test point that provides a DC voltage equal to the actual threshold setting.

A shaping delay cable is required to form the constant fraction pulse. The shaping delay circuit is made complete by connecting the appropriate cable length between two delay connectors, allowing the user to optimize time resolution by easily matching the characteristics of the detector. A monitor output is also provided to observe the constant-fraction shaped pulse to verify that the delay cable is correct.

A fast veto input has been included to perform an anti-coincidence function. This is helpful for rejection of unwanted events early in the system. Unlike a simple gating function, it provides a way of inhibiting the discriminator without adversely affecting the timing characteristics for the current event being processed.

The outputs of the 6915 are non-updating and adjustable in width from 5 nSec to 250 nSec providing four individually driven, current switched outputs. They are configured as two normal NIM outputs, one complemented NIM output and one positive TTL output. They have typical risetimes and falltimes of 1.2 nSec helping to preserve the excellent timing characteristics. The output transition times and pulse shapes are unaffected by the loading of the outputs in any combination.



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INPUT CHARACTERISTICS

General :

One input connector; 50 ohms $\pm 2\%$, direct coupled; less than 5% input reflection for a 2nSec input risetime; input protection clamps at +.7V and - 6V and can withstand ± 2 Amps (± 100 Volts) for a duration of 1mSec with no damage to the input.

Threshold :

Continuously variable from -25mV to -1Volt, 15-turn screwdriver adjustment; better than $\pm 0.20\%$ / °C stability; A front panel test point provides a DC voltage equal to the actual threshold setting.

Fast Veto :

One input connector, accepts normal NIM level pulse (-500mV), 50 ohms direct coupled; must overlap the negative going edge of the input pulse plus the shaping delay time to inhibit; accepts a 5nSec minimum input width.

OUTPUT CHARACTERISTICS

General :

Four (4) output connectors; Two normal NIM level outputs, one complemented NIM level, and one positive TTL output. The normal NIM outputs deliver pulses of -16mA (-800mV across 50 ohms). The complement output is quiescently -16mA (-800mV) and goes to 0mA (0 Volt), during output. The positive TTL output has an internal pull-up resistor of 82 ohms and will provide +2 Volts across a 50 ohm load or +3.5 Volts across a 1K ohm load. Output risetimes and falltimes are less than 1.5nSec from 10% to 90% levels.

CF Monitor :

One output connector, drives 50 ohm load; permits observation of the shaped constant fraction pulse to verify the shaping delay is optimized for the input pulse.

Width Control :

One 15-turn screwdriver adjustment; output width is continuously variable from 5nSec to 250nSec; better than $\pm 0.20\%$ / °C stability. Non-updating output regeneration will ignore any new inputs while the output is active.

GENERAL PERFORMANCE

Shaping Delay:

Requires a 50 ohm coaxial cable; recommended delay range of 500pSec to 100nSec; the maximum delay is limited only by the cable attenuation, a factor of two attenuation can be tolerated without significant degradation of the time resolution; stability is better than 10pSec/ °C. The shaping delay time should approximately equal the input risetime plus 500 pSec.

Continuous Repetition Rate:

Greater than 100 MHz, with output width set at minimum, (1nSec shaping delay).

Pulse Pair Resolution:

Better than 10nSec, with output width set at minimum, (1nSec shaping delay cable).

Input to Output Delay:

Less than 10nSec, (with 1nSec shaping delay cable).

Multiple Pulsing:

One and only one output pulse regardless of input pulse amplitude or duration.

Power Supply +8 Volts to +16 Volts @ 100mA.

Requirements: -8 Volts to -16 Volts @ 225mA.

An 18 inch three-wire cable is provided unless otherwise specified.

Note: Since the power supplies are internally regulated, the voltages do not need to be balanced.

Operating Temperature:

0 ° C to 70 ° C ambient.

Packaging:

Black anodized aluminum enclosure; 2.25" x 6" x 1.75", (5.72cm x 15.25cm x 4.45cm).

Quality Control:

Standard 36 hour cycled burn-in with switched power cycles.

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