

# Phillips Scientific

## Quad 300 MHz Discriminator

## NIM MODEL 704

### FEATURES

- \* Guaranteed 300 MHz Operation
- \* Deadtimeless Updating Outputs
- \* Fast Veto and Bin Gate Inhibiting
- \* High Fan - Out Capability

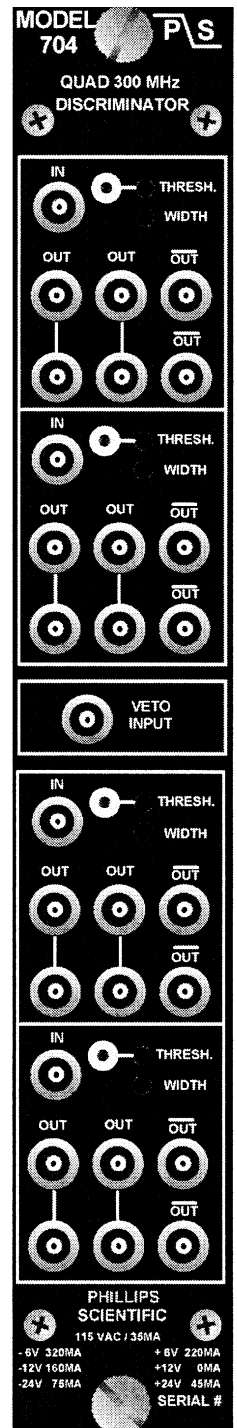
### DESCRIPTION

Utilizing the most advanced technology, the Model 704 Quad Discriminator boasts a 300 MHz continuous repetition rate capability. The updating feature ensures deadtimeless operation for coincidence applications, while the double-pulse resolution is a remarkable 3.3nSec for counting applications. A fifteen-turn potentiometer provides continuous output width adjustment from 2nSec to over 50nSec for each channel.

The threshold is variable from -10mV to -1volt with a fifteen-turn potentiometer on each channel. The threshold setting is easily determined from a front panel test point that provides a DC voltage equal to ten times the actual threshold.

Inhibiting of the discriminator can be accomplished in two ways. A front panel LEMO input accepts a NIM level pulse for fast vetoing of all channels. The fast veto is capable of inhibiting a single pulse from a 300 MHz input pulse train. Secondly, a slow bin gate via the rear panel connector inhibits all four channels and is enabled or disabled from a rear panel slide switch.

The outputs are the current source type with two pairs of negative bridged outputs and two complements for each channel. When only one output of a bridged pair is used, a double-amplitude NIM pulse (-32mA) is generated, useful for driving long cables with narrow pulse widths. The outputs have transition times of 1nSec, and their shapes are virtually unaffected by loading the outputs in any combination.



**Phillips Scientific**

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## INPUT CHARACTERISTICS

### General:

One LEMO connector input per channel; 50ohms,  $\pm 1\%$ , direct coupled; less than  $\pm 2\%$  input reflection for a 1.0nSec input risetime. Input protection clamps at +.7Volts and -5Volts, and can withstand  $\pm 2$ Amps ( $\pm 100$ Volt) for 1mSec with no damage to the input.

### Threshold:

From -10mV to -1Volt; 15-turn screwdriver adjustment; better than  $\pm 0.2\%/^{\circ}\text{C}$  stability; front panel test point provides a DC voltage ten (10) times the actual threshold setting.

### Fast Veto:

One LEMO connector input common to all four (4) channels; accepts normal NIM level pulse (-500mV), 50 ohms, direct coupled; must precede the negative edge of input pulse by 3nSec; Capable of gating a single pulse from a 300 MHz continuous pulse train.

### Bin Gate:

Rear panel slide switch enables or disables slow bin gate in accordance with TID-20893.

## OUTPUT CHARACTERISTICS

### General:

Six (6) LEMO connector outputs per channel; Two pairs of negative bridged outputs and two complements. The bridged outputs deliver -32mA into a single 50 ohm load (-1.6Volts) and -16mA (-800mV) with both terminated. The complementary outputs are quiescently -16mA and go to 0mA during output. The output rise and fall times are less than 1nSec from 10% to 90% levels. The output shapes are optimized when the bridged outputs are 50 ohm terminated.

### Width Control:

One control per channel; 15-turn screwdriver adjustment; outputs continuously variable from 2nSec to 50nSec. Width stability is better than  $\pm 0.1\%/^{\circ}\text{C}$  of setting.

### Updating Output:

The output pulse will be extended if a new input pulse occurs while the output is active. A 100% duty cycle can be achieved.

## GENERAL PERFORMANCE

### Continuous Repetition Rate:

Greater than 300 MHz, 3 db bandwidth; and a throughput counting rate of 300 MHz with output width set at minimum.

### Pulse-Pair Resolution:

Better than 3.3 nSec, with output width set at minimum.

### Input to Output Delay:

Less than 8.0 nSec.

### Multiple Pulsing:

None; One and only one output pulse regardless of input pulse amplitude or duration.

### Power Supply Requirements:

- 6 Volts @ 320 mA	+6 Volts @ 220 mA	115 VAC @ 35mA
-12 Volts @ 160 mA	+12 Volts @ 0 mA	
-24 Volts @ 75 mA	+24 Volts @ 45 mA	

**Note:** All currents are within NIM specification limits permitting a full powered bin to be operated without overloading.

### Operating Temperature:

0  $^{\circ}\text{C}$  to 70  $^{\circ}\text{C}$  ambient.

### Packaging:

Standard single width NIM module in accordance with TID-20893 and Section ND-524.

### Quality Control:

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

### Options:

Call Phillips Scientific to find out about available options.

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