

# Phillips Scientific

## Octal Discriminator

# NIM MODEL 705

### FEATURES

- \* Individual Threshold and Width Controls
- \* Linear Summed Output
- \* Both Fast Veto and Bin Gate
- \* Low Cost
- \* Eight Channels in Single Width Module

### DESCRIPTION

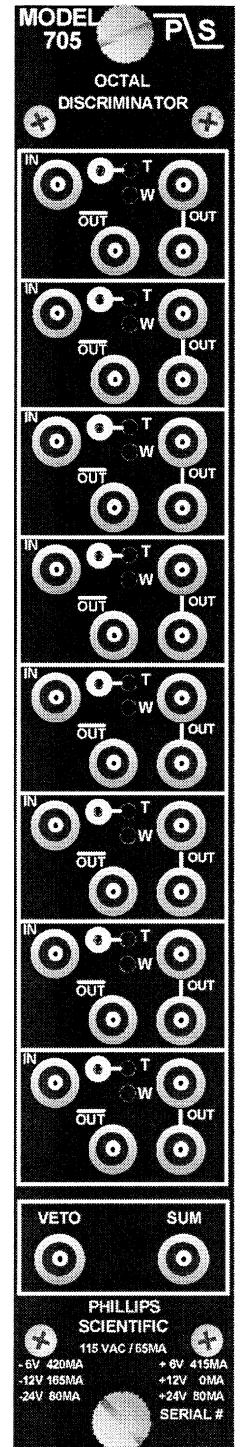
The Model 705 was specifically designed for modern experiments with large counter arrays, offering high performance and reliability at a reasonable cost. The 705 features eight (8) totally independent channels with individual threshold and width controls. In addition, a fast veto input and a summed output are common to all channels.

Each channel has a threshold adjustment continuously variable from -10 mV to -1 Volt with a front panel test point providing a DC voltage ten (10) times the actual threshold setting. Likewise, each channel has a non-updating regeneration circuit for adjustable output widths from 6 nSec to 150 nSec.

A unique summed output is common to all eight channels providing -1 mA of current for each activated channel, thus allowing a fast decision to be made on the number of channels simultaneously hit. Up to 16 channels can be "OR'D" directly by cable to other summed outputs allowing a versatile scheme to form a trigger.

A fast veto input allows simultaneous inhibiting of all channels to reject unwanted events early in the system. Similarly, a bin gate will inhibit the entire module when applied via the rear connector.

The outputs are the current source type with one pair of negative bridged outputs and one complement for each channel. When only one output of the bridged pair is used, a double-amplitude NIM pulse (-32mA) is generated, when both connectors are used normal NIM levels (-16mA) are produced. The outputs have crisp, clean transitions, and their shapes are unaffected by the loading conditions of the other outputs.



**Phillips Scientific**

"A THEORY DEVELOPMENT COMPANY"

31 Industrial Ave. \* Mahwah, NJ 07430 \* (201) 934-8015 \* Fax (201) 934-8269

## **INPUT CHARACTERISTICS**

### **General:**

One LEMO connector input per channel; 50ohms,  $\pm 1\%$ , direct coupled; less than  $\pm 2\%$  input reflection for a 2.0nSec input risetime; Input protection clamps at  $\pm 0.7$ Volt and  $-5$ Volts, and can withstand  $\pm 2$ Amps for 1mSec with no damage to the input.

### **Threshold:**

From  $-10$  mV to  $-1$  Volt; 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 eight (8) channels; accepts normal NIM level pulse ( $-500$  mV), 50 ohms, direct coupled; must precede the negative edge of input pulse by 5 nSec; 5 nSec minimum input width.

### **Bin Gate:**

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

## **GENERAL PERFORMANCE**

### **Continuous Repetition Rate:**

Greater than 75 MHz, with output width set at minimum.

### **Pulse-Pair Resolution:**

Better than 12 nSec, with output width set at minimum.

### **Input to Output Delay:**

Less than 9.0 nSec.

### **Multiple Pulsing:**

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

### **Power Supply Requirements:**

- 6 Volts @ 420 mA  
-12 Volts @ 165 mA  
-24 Volts @ 80 mA

+6 Volts @ 415 mA  
+12 Volts @ 0 mA  
+24 Volts @ 80 mA

115 VAC @ 65mA

**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.

## **OUTPUT CHARACTERISTICS**

### **General:**

Three LEMO connector outputs per channel; One negative bridged pair and one complement output. The bridged outputs deliver  $-32$ mA into a single 50 ohm load ( $-1.6$  Volts) and  $-16$ mA ( $-800$  mV) with both terminated. The complement is quiescently  $-16$ mA and goes to 0 mA during output. The output rise and fall times are less than 1.5nSec from 10% to 90% levels.

### **Width Control:**

One control per channel; 15-turn screwdriver adjustment; outputs continuously variable from 6 nSec to 150 nSec non-updating  $\pm 0.2\%/^{\circ}\text{C}$  stability.

### **Summed Output:**

One LEMO connector output common to all eight (8) channels;  $-1$  mA output pulse ( $-50$  mV into 50 ohms) for each channel fired. Output duration is equal to the output width setting of the respective channel. Output rise and fall times less than 2.5 nSec into 50 ohms. Up to 16 channels can be directly "OR'D" by cable.