

# Phillips Scientific

# Sixteen Channel Discriminator

# NIM MODEL 706

## FEATURES-

- \* Sixteen Channels in Single Width NIM Module
- \* 100 MHz Input to Output Rate
- \* Common Threshold Control -10 mV to -1 Volt
- \* Common Width Control 5 nS to 150 nS
- \* Fast Common Veto and Bin Gate
- \* Non-Updating Outputs
- \* One Pair Bridged Outputs per Channel
- \* Reliable Current-Switched Outputs

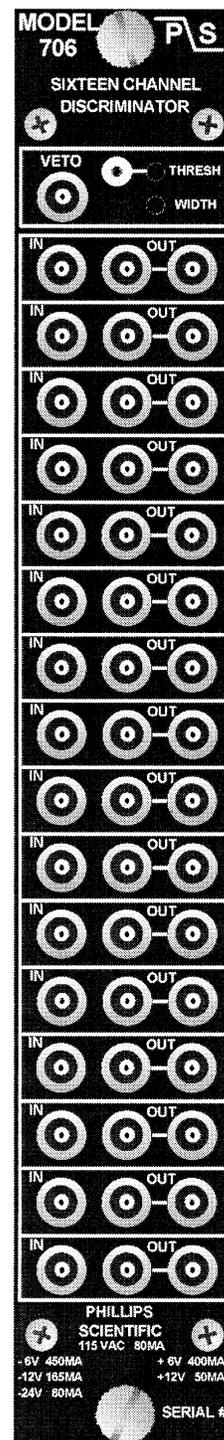
## DESCRIPTION

The Model 706 is a 100 MHz Leading Edge Discriminator specifically designed for experiments with large counter arrays, offering high performance and reliability at a reasonable cost. The 706 features sixteen channels with common threshold and width controls. In addition, a fast veto input and a Bin Gate are common to all channels.

The 706 has high input sensitivity of -10mV variable to -1Volt via a 15-turn front panel control. A front panel test point provides a DC voltage equal to the actual threshold to insure accurate settings. Likewise, output durations are continuously variable via a front panel control over the range of 5nSec to 150nSec. The 706 employs non-updating regeneration circuits for output widths that are always the same duration regardless of the input rate conditions.

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 for each channel. When only one output from the bridged pair is used, a double-amplitude NIM pulse (-32mA) is generated useful for driving long cables with narrow pulses. Two normal NIM levels are produced when both of the bridged outputs operate into 50 ohm loads. The output risetimes and falltimes are typically 1.5nSec, and their shapes are unaffected by the loading conditions of the other outputs.



**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 2.0nSec input risetime. Input protection clamps at +.7Volt and -5Volts, and can withstand  $\pm 2$ Amps ( $\pm 100$ Volts) 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; A front panel test point provides a DC voltage ten (10) times the actual threshold setting.

### **Fast Veto:**

One LEMO connector input common to all sixteen (16) channels; accepts normal NIM level pulse (-500 mV), 50 ohms, direct coupled; must precede the negative edge of input pulse by 5nSec; 5nSec 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 100 MHz, with output width set at minimum.

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

Better than 10nSec, with output width set at minimum.

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

Less than 9.0nSec.

### **Multiple Pulsing:**

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

### **Power Supply Requirements:**

- 6 Volts @ 450 mA

-12 Volts @ 165 mA

-24 Volts @ 80 mA

+ 6 Volts @ 400 mA

+12 Volts @ 50 mA

115 VAC @ 80mA

**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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## **OUTPUT CHARACTERISTICS**

### **General:**

Two LEMO connector outputs per channel; Negative NIM bridged pair type. The bridged outputs deliver -32mA into a single 50 ohm load (-1.6Volts), and -16mA (-800mV) with both terminated. The output rise and fall times are less than 1.5nSec from 10% to 90% levels.

### **Width Control:**

One 15-turn screwdriver adjustment per module. Controls all outputs simultaneously; variable from 5nSec to 150nSec non-updating outputs; stability  $\pm .35\%/^{\circ}\text{C}$ . The output widths track to within 2nSec or  $\pm 7\%$ , whichever is greater for all sixteen channels.

### **Non-Updating Outputs:**

The output width will equal the width control setting and will not be retriggered during an output pulse.