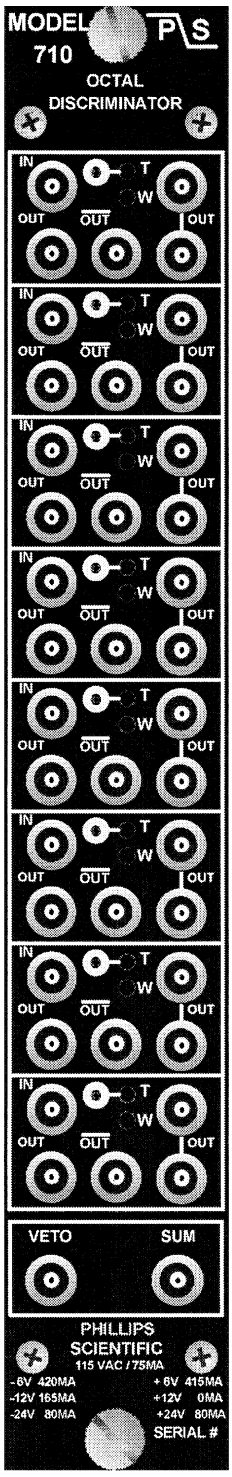
Phillips Scientific | Octal Discriminator | NIM MODEL 710

FEATURES

* 150 MHz Rate Capability
* Deadtimeless Updating Outputs
* Four Outputs Per Channel
* Fast Veto and Bin Gate Inhibiting
* Linear Summed Output



DESCRIPTION

The model 710 is a high-performance, eight channel, leading edge discriminator packaged in a single-width NIM module. It features independent threshold and width controls, a fast veto for inhibiting, a prompt linear summed output, and a versatile output configuration with four updating outputs per channel.

The 710 has high input sensitivity of -10mV variable to -1volt via a 15-turn front panel control. A front panel test point on each channel provides a DC voltage equal to ten times the actual threshold to insure accurate settings.

A unique summed output, common to all eight channels, delivers -1mA 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 providing a versatile scheme to form a trigger.

Inhibiting of the discriminator can be accomplished in two ways. A front panel LEMO input accepts a NIM level pulse for fast simultaneous inhibiting of all eight channels. Secondly, a slow bin gate via the rear panel connector inhibits the module and is enabled or disabled from a rear panel slide switch.

Output durations are continuously variable via a front panel control over the range of 4nSec to 150nSec. The updating design permits deadtimeless operation which is desirable for fast coincidence applications at high rates. The 710 has four high-impedance current switching outputs per channel. They are configured as one pair of double amplitude bridged outputs, one normal NIM level and one complemented NIM level. 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.

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"A THEORY DEVELOPMENT COMPANY"
*150 Hilltop Road * Ramsey, NJ 07446 * (201) 934-8015 * Fax (201) 934-8269*

INPUT CHARACTERISTICS

General:
One LEMO connector input per channel; 50ohms, ±1%, direct coupled; less than ±2% input reflection for a 2.0nSec input risetime; Input protection clamps at +.7Volt and -5Volts, and can withstand ±2Amps (±100V), for 1mSec with no damage to the input.

Threshold:
From -10mV to -1Volt; One front panel 15-turn screwdriver adjustment for each channel; better than ±0.2%/°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 eight (8) channels; accepts normal NIM level pulse (-500 mV), 50 ohms, direct coupled; The veto input must precede the negative edge of input pulse by 5nSec; 4nSec minimum input width.

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

OUTPUT CHARACTERISTICS

General:
Four (4) LEMO connector outputs per channel; One negative NIM bridged pair, one normal NIM level, and one complement output. The bridged outputs deliver -32mA (-1.6 Volts), into a single 50 ohm load and -16mA (-800 mV) with both terminated. The normal NIM output delivers -16mA (-800mV into 50 ohms). The complement is quiescently -16mA and goes to 0mA during output. The output rise and fall times are less than 1.5nSec from 10% to 90% levels.

Width Control:
One front panel control per channel; 15-turn screwdriver adjustment; outputs continuously variable from 4nSec to 150nSec, updating; Output width stability is ±0.15%/°C of setting.

Updating Operation:
The output pulse will be extended if a new input pulse occurs while the output is active. This provides deadtimeless operation and a 100% duty cycle can be achieved.

Summed Output:
One LEMO connector output common to all eight (8) channels; -1mA output pulse (-50mV 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 are less than 2.5nSec into 50 ohms. Up to 16 channels can be directly "OR'D" by cable. Dynamic range greater than -1Volt.

GENERAL PERFORMANCE

Continuous Repetition Rate:
Greater than 150 MHz, with output width set at minimum.

Pulse-Pair Resolution:
Better than 6.5 nSec, with output width set at minimum.

Input to Ouput Delay:
Less than 8.0 nSec.

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

Power Supply Requirements:

- 6 Volts @ 420 mA		*+6 Volts @ 415 mA*
-12 Volts @ 165 mA		*+12 Volts @ 0 mA*
-24 Volts @ 80 mA	*115 VAC @ 75mA*	*+24 Volts @ 80 mA*

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

Operating Temperature:
0 °C to 70 °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.

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