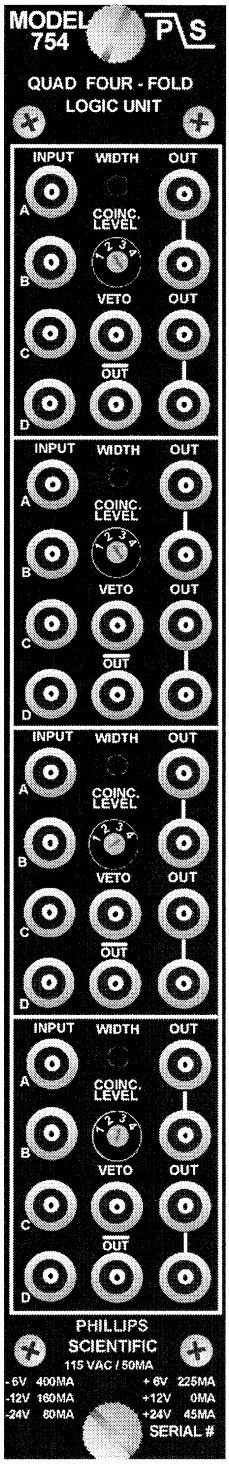
Phillips Scientific

Quad 300 MHz Majority Logic

NIM MODEL 754

FEATURES

* *Versatile Majority Logic Unit*
* *Four Independent Channels*
* *300 MHz Rate Capability*
* *Deadtimeless Updating Outputs*
* *Fast Veto for Anti-Coincidence*



DESCRIPTION

The Model 754 logic unit contains four channels of four input logic with veto in a single width NIM module. Logical AND, OR, Majority logic, Fan-in/Fan-out, and Anti-coincidence functions can be performed with this versatile module. All functions are direct coupled and operate to over 300 MHz with input overlap times as narrow as 750pSec.

Each channel has four logic inputs, an anti-coincidence input, a coincidence level switch, and five outputs with common width control. The inputs are enabled by connecting the input cable to the desired input, eliminating errors often occurring with switched inputs. The setting of the coincidence level switch then determines whether a logical OR, AND, or Majority logic function will produce an output.

After the inputs have satisfied the logic function desired, triggering of an updating regenerative stage produces a standardized output pulse, independent of the input pulse shapes or overlap times. The updating feature ensures deadtimeless operation, while the double pulse resolution is 3.3nSec for fast counting applications.

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

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INPUT CHARACTERISTICS

A,B,C,D:
Four (4) LEMO connector inputs per section; Accepts NIM level logic signals (-500mV), 50 ohm input impedance, ±2%, direct coupled; Input reflections are less than ±5% for a 1nSec input risetime. Inputs are protected to withstand ±50Volts for 1mSec with no damage. The inputs respond to a 750pSec or longer input pulse width.

Fast Veto:
One LEMO connector input per section; accepts normal NIM level logic signal, (-500mV), 50 ohm input impedance, direct coupled; Protected against damage for ±50Volt input transients. Requires a 3nSec minimum input pulse width. 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 via the rear connector. Signal levels are in accordance with the TID-20893 standard. The entire module will inhibit within 10nSec from the bin gate signal.

OUTPUT CHARACTERISTICS

General:
Five (5) LEMO connector outputs per section; Two pairs of negative bridged outputs and one complemented NIM. The bridged outputs deliver -32mA into a single 50 ohm load (-1.6Volts) and -16mA (-800mV) with both terminated. The complementary output is quiescently -16mA (-800mV) and goes 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 section; 15-turn screwdriver adjustment. Outputs are continuously variable from 2nSec to 50nSec. Width stabilty is better than ±0.1%/°C of setting.

Updating Output:
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.

GENERAL PERFORMANCE

Logic Functions:
Logical AND, OR, Majority logic and Fan-in/Fan-out. All functions have leading edge inhibit and produce restandardized outputs.

Resolving Time:
Better than 200pSec for any input combination. Stability is better than 10pSec/ °C.

Continuous Repetition Rate:
Greater than 300 MHz guaranteed throughput counting rate, with output width set at minimum.

Pulse-Pair Resolution:
Better than 3.3 nSec, with output width set at minimum.

Input to Ouput Delay:
Less than 8.5 nSec.

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

Power Supply Requirements:

- 6 Volts @ 400 mA	*+ 6 Volts @ 225 mA*	*115 VAC @ 50 mA*
-12 Volts @ 160 mA	*+12 Volts @ 0 mA*	
-24 Volts @ 80 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 °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.

Options:
Call Phillips Scientific to find out about available options.

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