

NSCL-ELECTRONIC

MODEL 754 LOGIC UNIT

FEATURES

- VERSATILE LOGIC MODULE WITH MAJORITY LEVEL SELECTION
- FOUR INDEPENDENT CHANNELS
- 300 MHz RATE CAPABILITY
- DEADTIMELESS UPDATING OUTPUTS
- FAST ANTI-COINCIDENCE CAPABILITY

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 750 psec.

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 3.3 nsec 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 (-32 mA) is generated for driving long cables with narrow pulse widths. The outputs have transition times of less than 1.0 nsec, and their shapes are unaffected by the loading conditions of the other outputs.

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INPUT CHARACTERISTICS

- A, B, C, D : Four inputs per section, LEMO connectors; accepts NIM level logic signals (-500 mV); 50 ohm input impedance DC coupled; input reflections are less than +5% for a 1 nsec risetime. Inputs are protected against damage from +50 volt input transients. Inputs respond to a 750 psec or greater input width.
- Veto : One input per section, LEMO connector; accepts NIM level logic signal (-500 mV); 50 ohm input impedance, DC coupled; less than +5% input reflection for a 1 nsec risetime; protected against damage +50 volt input transients. Requires a 3.0 nsec minimum input width in time with the input pulse leading edge to inhibit. Capable of inhibiting a single pulse from a 300 MHz input pulse train.
- Bin Gate : Rear-panel slide switch enables or disables the slow bin gate via the rear connector. Signal levels are in accordance with the TID-20893 standard.

OUTPUT CHARACTERISTICS

- General : Five outputs per section, two pairs of negative bridged and one complemented NIM. The two pairs of bridged outputs are quiescently 0 mA and -32 mA during output. (-1.6 V into 50 ohms or -.8 V into 25 ohms) The complemented output is quiescently -16 mA and 0 mA during output. Risetimes and falldetimes are less than 1.0 nsec, and output pulse shapes are virtually unaffected by loading the outputs in any combination.

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We have 260ms width

OUTPUT CHARACTERISTICS (continued) *option*

- Width Control : One control per section; 15-turn screwdriver adjustment. Outputs are continuously variable from 2 nsec to 50 nsec; better than 0.1%/°C stability.
- Updating Operation : The output pulse will be extended if a new input pulse occurs while the output is active. This provides deadtimeless operation and 100% duty cycle can be achieved.

GENERAL PERFORMANCE

- Functions : Logical AND, OR, majority logic, and logical fan-in/fan-out. All functions have leading edge inhibit with standardized outputs.
- Resolving Time : Timing of better than 200 psec can be achieved for any input combination. Stability is better than 10 psec/°C.
- Rate : 300 MHz guaranteed minimum.
- Double-Pulse Resolution : Better than 3.3 nsec, with output width set at minimum.
- Input to Output Delay : Less than 8.5 nsec.
- Power Supply Requirements :
-6 V @ 400 mA +6 V @ 225 mA
-12 V @ 160 mA +12 V @ 0 mA
-24 V @ 80 mA +24 V @ 45 mA
115 Vac @ 50 mA

NOTE: All currents within NIM specification limits allowing 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 524.

OPTIONS

Call Phillips Scientific to find out about available options.

