

- For adjusting the delay and width of coincidence and gating pulses
- Eight, independent, duplicate channels in a compact package
- TTL outputs and NIM-standard fast-negative outputs
- Output delays independently adjustable from 70 ns to 10  $\mu$ s
- Output widths independently adjustable from 70 ns to 10  $\mu$ s

The ORTEC model GG8020 Octal Gate and Delay Generator provides a compact and versatile solution for gating and coincidence logic requirements in large experiments, or in measurements requiring multiple delays and pulse widths. It contains eight independent channels of gate and delay generators in a single-width NIM module.

Each channel accepts NIM-standard, fast negative logic pulses at its input. The leading edge of the input signal triggers a delay period that can be adjusted separately for each channel. At the end of the delay period, an output pulse is generated. The width of this output pulse can be adjusted independently for each channel. Delay ranges from 70 to 1000 ns, or from 0.4 to 10  $\mu$ s can be selected separately for each channel by one of eight jumpers on the printed wiring board. A second set of eight jumpers independently select ranges from 70 to 1000 ns, or 0.4 to 10  $\mu$ s for the output pulse widths.

Each channel produces two NIM-standard, fast negative logic pulse outputs, and one positive TTL output. The fast negative outputs provide fan-out capability, and are particularly useful for driving overlap coincidence modules that require NIM-standard, fast negative logic levels. They can also be used as delayed inputs to timing instruments, or as gating signals on modules that require fast negative inputs. The TTL output is compatible with modules requiring either TTL inputs, or NIM-standard, slow positive logic pulses. The TTL output is ideal for gating ADCs and multichannel analyzers.

## Specifications

### PERFORMANCE

**NUMBER OF DUPLICATE CHANNELS** 8

**OUTPUT DELAY** Adjustable from <70 to >1000 ns, or from <0.4 to >10  $\mu$ s. Temperature coefficient <0.04%/°C from 0 to 50°C.

**OUTPUT PULSE WIDTH** Adjustable from <70 to >1000 ns, or from <0.4 to >10  $\mu$ s. Temperature coefficient <0.04%/°C from 0 to 50°C.

**DEAD TIME** Typically equal to the Delay plus the Output Pulse Width plus 20 ns.

**DELAY JITTER** <0.04% of the selected delay.

### CONTROLS

**DELAY, S OR L** Eight jumpers on the printed wiring board permit independent selection of a Short (S) or Long (L) delay time range for each channel. The delay range is 70 to 1000 ns on the Short setting and 0.4 to 10  $\mu$ s on the Long setting.

**DELAY** Eight front-panel, 12-turn, screwdriver adjustments provide independent fine adjustment of the delay within the range selected by the respective S OR L DELAY jumper.

**WIDTH, S OR L** Eight jumpers on the printed wiring board permit independent selection of a Short (S) or Long (L) width range for each channel. The width range is 70 to 1000 ns on the Short setting and 0.4 to 10  $\mu$ s on the Long setting.

**WIDTH** Eight front-panel, 12-turn, screwdriver adjustments provide independent fine adjustment of the width within the range selected by the respective S OR L WIDTH jumper.

### INPUTS

**IN** Eight front-panel LEMO connectors (one for each channel) accept NIM-standard fast negative logic signals to trigger the delayed output pulses. The input pulse minimum amplitude is -600 mV; minimum width is 10 ns. The input is dc-coupled with a 50-  $\Omega$  input impedance.

### OUTPUTS

**OUT** Two front-panel LEMO output connectors for each channel deliver NIM-standard, fast negative logic signals. The output delay relative to the input is set by the DELAY adjustment, and the output duration is set by the WIDTH control. The outputs are typically -16 mA (-800 mV into a 50-  $\Omega$  load), with rise and fall times <4 ns.

**TTL** One front-panel LEMO connector for each channel delivers a TTL version of the signal from the OUT connectors. The TTL output provides <+0.4 V in the quiescent state, and nominally +4 V into a 50-  $\Omega$  load during the output pulse. The rise time is <20 ns.



# GG8020

## Octal Gate and Delay Generator

### ELECTRICAL AND MECHANICAL

**POWER REQUIRED** The model GG8020 derives its power from a standard NIM bin and power supply. The required power is +6 V at 150 mA, and -6 V at 2 A.

### WEIGHT

Net 1.3 kg (2.8 lb)  
Shipping 2.2 kg (4.8 lb)

**DIMENSIONS** NIM-standard, single-width module, 3.43 x 22.13 cm (1.35 x 8.714 in.) front panel per DOE/ER-0457T.

### Ordering Information

To order, specify:

Model	Description
GG8020	Octal Gate and Delay Generator

Specifications subject to change  
011108

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