

- Provides fast coincidence determinations with adjustable resolving time
- Three selectable, positive-polarity coincidence inputs
- One selectable, positive-polarity anticoincidence input
- Adjustable 10 to 110 ns resolving time



The ORTEC Model 414A Fast Coincidence is a modular threefold coincidence unit that allows fast coincidence determination between any two or three input signals. The term "fast" indicates the general nature of the coincidence circuit; that is, input pulses are reshaped, and the actual coincidence determination is made on the leading edge, or leading portion, of the pulses. A dc-coupled anticoincidence input is provided to inhibit the coincidence output by a dc voltage or a pulse that overlaps the period of coincidence of the coincident pulses. The coincidence inputs are ac-coupled, and all four inputs are controlled by In/Out toggle switches.

The resolving time,  $2\tau$ , of the fast coincidence unit may be varied over a 10- to 110-ns range by a 10-turn control for accurate resettability of the resolving time. The resolving time of the anticoincidence circuit is set by the width of the input pulse.

## Specifications

### PERFORMANCE

**PULSE PAIR RESOLUTION** <100 ns on any single input; for coincidence events, <1  $\mu$ s on the coincidence output.

**RESOLVING TIME ( $2\tau$ )** Continuously variable from 10 to 110 ns for coincidence signals; set by the width of the input pulse for the anticoincidence signal.

**TEMPERATURE INSTABILITY**  $2\tau$  changes  $<\pm 0.2\%/^{\circ}\text{C}$  from 0 to 50 $^{\circ}\text{C}$ .

### CONTROLS

**RESOLVING TIME (10–110 ns)** Front-panel 10-turn locking potentiometer for controlling resolving time for inputs A, B, and C over a range from 10 to 110 ns.

**INPUT CONTROLS** Toggle switches for using any input combination desired and for disabling input signals to the coincidence and anticoincidence circuits without input coaxial cables having to be removed.

### INPUTS

**COINC** Front-panel BNC connectors provide 3 ac-coupled coincidence inputs (A, B, C) of positive polarity; 2-V threshold, 20-ns minimum width required; absolute maximum input 50 V; impedance >3000  $\Omega$ .

**ANTICOINC** Front-panel BNC connector provides one dc-coupled anticoincidence input (D) for inhibiting coincidence output; +2 V threshold, 20-ns minimum width required; absolute maximum input 50 V; impedance >3000  $\Omega$ .

### OUTPUTS

**OUTPUT** Two separate buffered coincidence output signals through front-panel BNC connectors provide positive pulses  $\geq 500$  ns wide with 5-V minimum amplitude; ac-coupled with <10- $\Omega$  impedance; monitored through oscilloscope test points on front panel.

### ELECTRICAL AND MECHANICAL

**POWER REQUIRED** The Model 414A derives its power from a standard NIM bin/power supply. The power required is +24 V, 30 mA; -24 V, 30 mA; +12 V, 120 mA; and -12 V, 85 mA.

### WEIGHT

**Net** 1.09 kg (2.4 lb).

**Shipping** 2.0 kg (4.4 lb).

**DIMENSIONS** NIM-standard double-width module 6.90 X 22.13 cm (2.70 X 8.714 in.) per DOE/ER-0457T.

## Ordering Information

To order, specify:

Model	Description
414A	Fast Coincidence

Specifications subject to change  
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