

Model SCA103

Single Channel Analyzer

FEATURES

- Crossover type timing derivation
- Dynamic range >100:1
- Exceptional stability - DC coupled input
- Two independent positive outputs
- Automatic peak detection

DESCRIPTION

The model SCA 103 analyzes the peak amplitude of energy pulses from nuclear pulse shaping amplifiers for compliance with energy levels determined by front panel controls, and generates two logic outputs which are time derived by the crossover technique. The crossover timing technique exploits the amplitude insensitive zero voltage crossing of a bipolar pulse to provide stable timing reference for a broad energy range.

SPECIFICATIONS

INPUT

SIGNAL INPUT: accepts positive +0.1 to +10 VDC, preferably unipolar signals but also bipolar (positive lobe leading) pulses from shaping amplifier. DC coupled, input impedance 2 Kohms. The unit is factory set for signals with a rise time of 1 micro sec. but can be adapted to shorter or longer rise times. One front panel BNC connector.

OUTPUTS

CROSSOVER OUTPUTS: two independent outputs, positive logic +2 V nominal pulse amplitude into 50 Ohms. Output impedance 50 ohms. Pulse width adjustable from 0.6 to 3.5 microseconds. Front panel BNC connectors.

CONTROLS

LOWER LEVEL: front panel ten-turn locking dial potentiometer to set lower discriminator threshold level

UPPER LEVEL/WINDOW: front panel ten-turn locking dial potentiometer to set upper discriminator threshold level or window width

NORM/INT/WINDOW SWITCH: front panel toggle switch

to select independent setting of upper and lower level, only the lower level or window operation

PULSE WIDTH: front panel screw-driver adjust potentiometer to trim positive outputs width

LED INDICATOR: frontpanel LED indicates the counting activity of the SCA103. The color of the LED changes according to the counting rate: green - up to approx. 4 kHz, orange - to approx. 10 kHz, red - above 10 kHz.

PERFORMANCE

DISCRIMINATOR NONLINEARITY: less than +/- 0.25% of full scale

DISCRIMINATOR STABILITY: better than +/- 0.02%/°C of full scale, temperature range 0 °C to +50 °C

DISCRIMINATOR RANGE: better than 100:1

PULSE PAIR RESOLUTION: 600 nanoseconds

WALK: referenced to 10 V input, for crossover mode +/- 2 nanoseconds, bipolar input pulse with 0.5 microseconds near Gaussian shaping 50:1 dynamic range

POWER

+ 6 V	75mA
+12 V	50 mA
+ 24 V	10 mA
- 12 V	40 mA

PHYSICAL

SIZE: standard single width NIM module

NET WEIGHT: approx. 0.7 kg



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