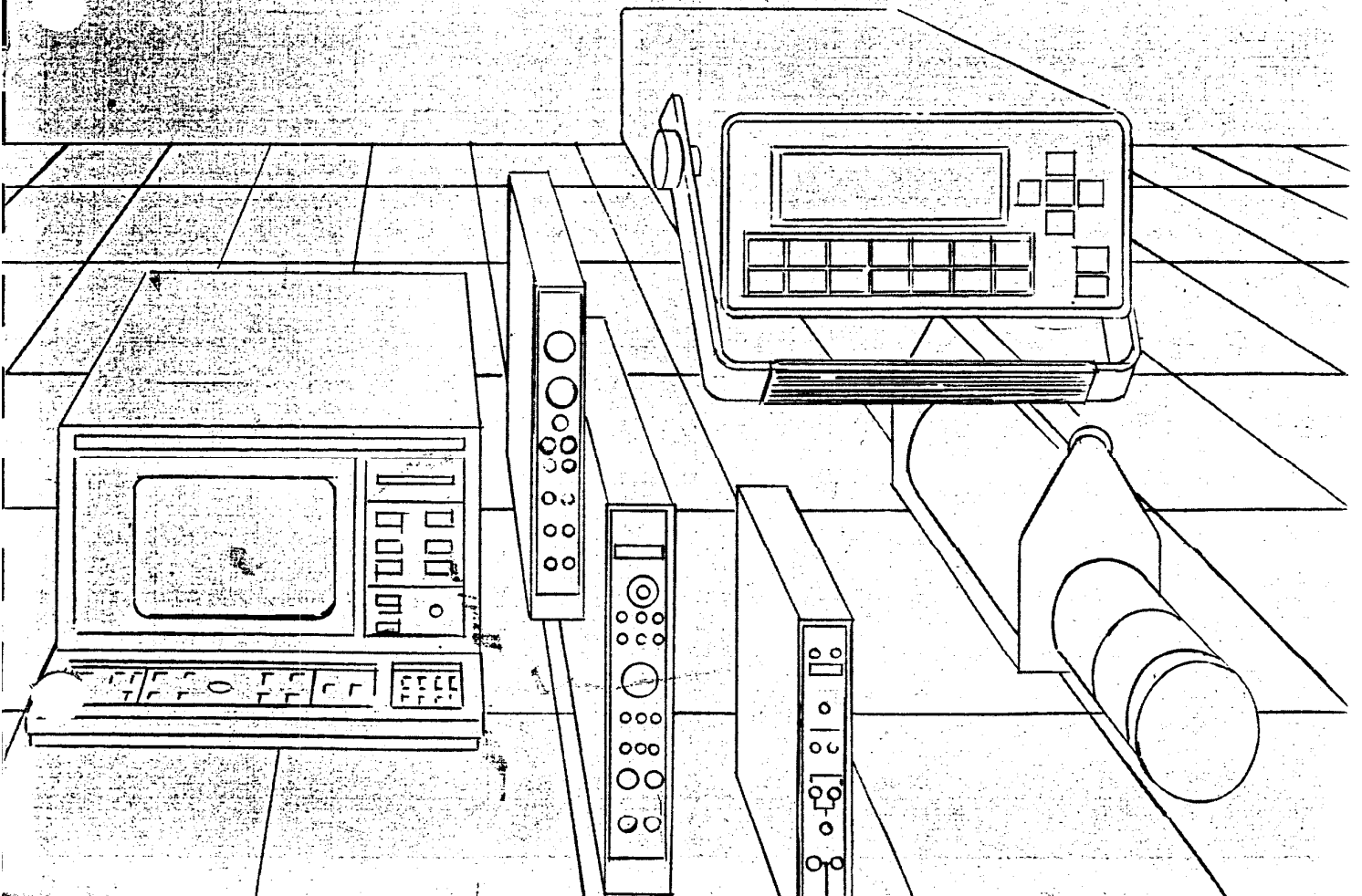


CANBERRA

PULSER
Model 807

Instruction Manual



**PULSER
Model 807**

Instruction Manual

MODEL 807 PULSER

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MODEL 807 PULSER

Section 1 INTRODUCTION

1.1 GENERAL

The Model 807 Pulser provides a source of positive or negative pulses that are usable for preliminary setup and testing of a nuclear system. The pulses have short rise times and long decay times (tail pulses) and occur at a rate of 60 per second. The height of the pulses is highly stable and is selectable by front panel controls. Continuous adjustment of the normal output from 0 to 10 volts is available with a ten-turn potentiometer. In addition, an attenuated output which reduces the normal output by factors of 2, 5, 10 and 10 or any combinations of these values is available.

1.2 APPLICATIONS

The tail pulses the Model 807 provides simulate the output of a detector/preamplifier combination (i.e., short rise time and long, exponential decay time). By providing pulses of known amplitude, specific energy levels in a detector can be simulated.

Specifically, the Model 807 can be used to evaluate amplifier noise and linearity, align delays in coincidence systems, calibrate pulse height analyzers, evaluate system stability and generally check the overall operation of a system before beginning experimental runs.

Section 2
SPECIFICATIONS

2.1 PERFORMANCE

LINEARITY OF PULSE
AMPLITUDE CONTROLS

Better than 0.25% of full scale.

STABILITY OF PULSE
AMPLITUDE

Better than 0.005%/°C; better than 0.05% over 24
hours.

RIPPLE AND NOISE

Less than 0.01% RMS.

2.2 CONTROLS

PULSE HEIGHT

0 to 10 volts by a ten-turn front panel control.

ATTENUATION

Four switches to select attenuation of attenuated
output only; X2, X5, X10, X10.

MODE

Positive pulses, negative pulses, or OFF by a three
position front panel toggle switch.

2.3 OUTPUTS

NORMAL OUTPUT

Positive or negative 0 to 10 volt pulses
unterminated (0 to 5 volt pulses into 100 ohms);
rise time ≤ 10 nsec exponential; fall time ≈ 70 μ sec
exponential decay time constant; output
impedance 100 ohms.

ATTENUATED OUTPUT

Same as Normal Output, except pulse height
divided by the attenuation factors selected.

Section 3
CONTROLS AND CONNECTORS

3.1 INITIAL OPERATION

1. Insert module in ADC compatible base unit/power supply such as Canberra Model 2000 turn on power switch.
2. Set the mode switch to positive and observe the pulses at the NORMAL OUTPUT with an oscilloscope; vary the PULSE HEIGHT control and observe that the voltages agree with the settings on the ten-turn control.
3. Compare the output from the ATTENUATION OUTPUT to the NORMAL OUTPUT when all the attenuator switches are out. The pulses should have the same height and shape. Check both outputs to ensure that the rise time is less than 10 nanoseconds and that the time constant of the fall time (the time it takes the pulse to decay to 0.37 of its initial height) is approximately 70 microseconds.
4. Insert the X2 attenuator switch. Observe with the oscilloscope that the pulse from the ATTENUATOR OUTPUT is one half the height of the pulse that appears at the NORMAL OUTPUT. The height of the pulse that appears at the NORMAL OUTPUT is not affected by the ATTENUATOR switches.
5. Insert the attenuator switches one at a time or in combinations. Measure the height of the pulses at the ATTENUATOR OUTPUT with the oscilloscope to ensure that the pulses have the correct height.
6. Set the mode switch to negative and repeat the observations of the pulses at the two outputs.

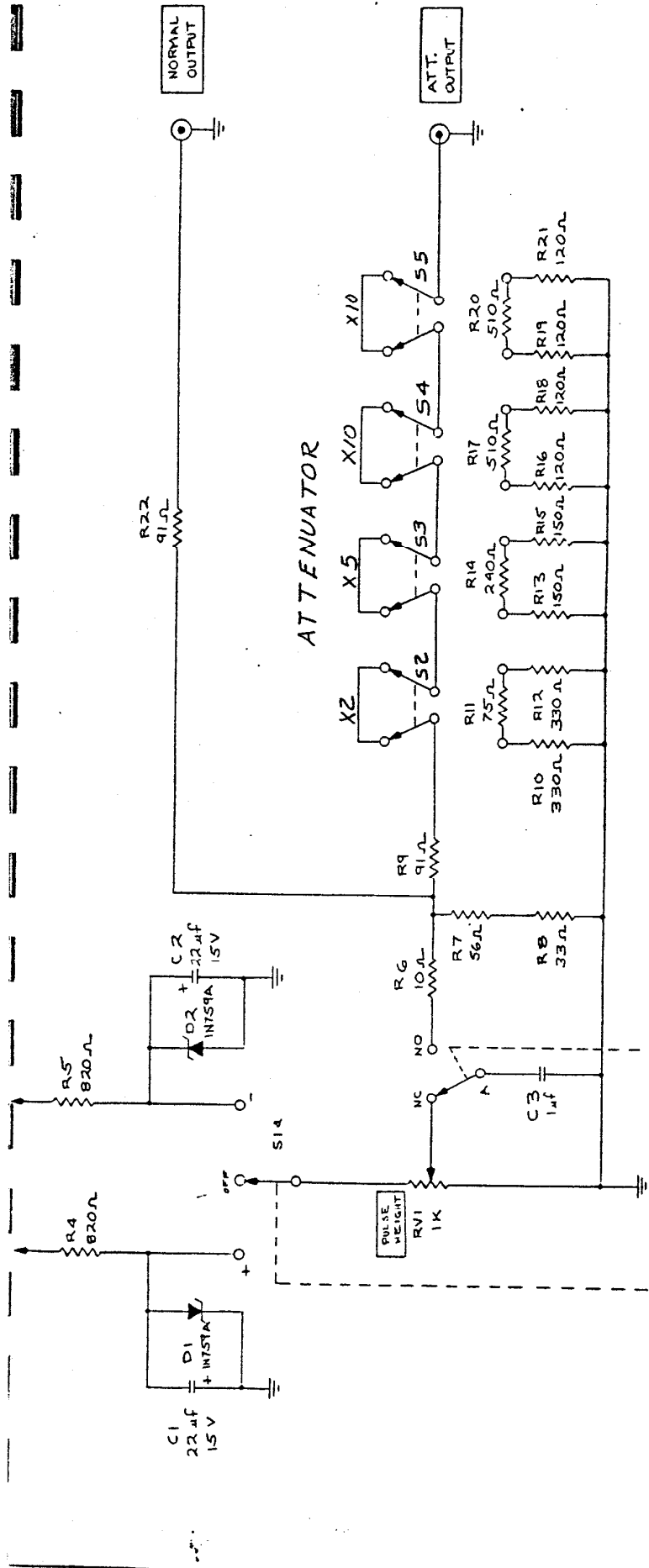
Section 4 MODULE OPERATION

4.1 CONTROL FUNCTIONS

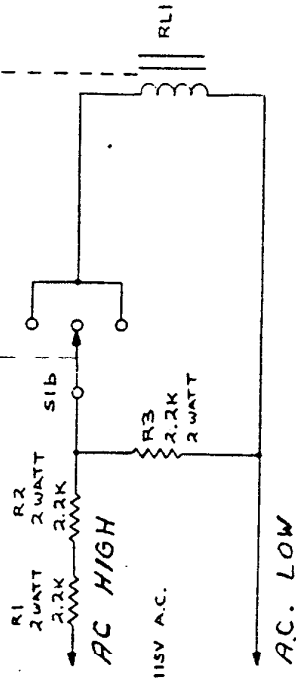
1. **PULSE HEIGHT POTENTIOMETER:** a ten-turn potentiometer used to adjust the height of the pulses at the NORMAL OUTPUT from 0 to 10 volts.
2. **ATTENUATOR SWITCHES:** four switches that introduce an attenuation of X2, X5, X10 and X10 respectively in the pulses at the ATTENUATED OUTPUT relative to those at the NORMAL OUTPUT.
3. **MODE:** a three position switch that selects positive or negative pulses, or which disables the mercury relay (OFF).

4.2 OUTPUT SPECIFICATIONS

1. **NORMAL OUTPUT:** positive or negative 0 to 10 volts unterminated (0 to 5 volts into 100 ohms); rise time less than 10 nanoseconds, fall time 70 microsecond time constant for unterminated output; output impedance 100 ohms.
2. **ATTENUATED OUTPUT:** same as NORMAL OUTPUT, except amplitude is divided by the attenuation factors selected.



NOTE: 1. ALL UNMARKED RESISTORS 1/2 WATT 5%



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TITLE SCHEMATIC DIAGRAM 1	
DECIMAL ± .005		PULSER	
FRACTION ± 1/16		MODEL 507	
ANGLE ± 1°		APPROVAL	
MATERIAL		DATE	
FINISH		DRAWING NO. 510715	
		REV. A	
		B	
STURRUP, INC. 50 SILVER ST. MIDDLETOWN, CONN.			