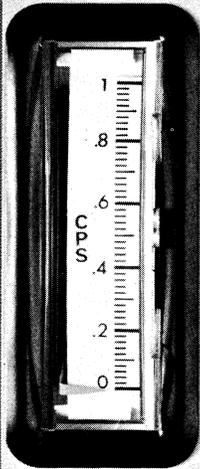


ORTEC®

MODEL 441

RATEMETER



.5 1  
X

100 1K 10K 100K

COUNTS/SEC.

1 3 10

% STD. DEV.

INPUT

## ORTEC 441 RATEMETER

### 1. DESCRIPTION

The ORTEC 441 Ratemeter is a simple, high accuracy linear count ratemeter that is contained in a single width NIM package. The 441 accepts a wide range of input counting rates and provides statistical accuracy selectability. The use of Standard Deviation rather than "time constant" allows the operator to obtain the fastest possible time response for a desired accuracy. Long term stability and reliability are assured by the use of integrated circuit amplifier and logic circuits and matched field-effect transistors in the circuit design of the 441. The recorder output span is adjustable over a wide range and the input pulse requirements are easily met by almost all nuclear instruments.

### 2. SPECIFICATIONS

RANGES: 100, 1000, 10K, and 100K counts per second with a multiplier of 1 and 0.5 for total ranges of 50, 100, 500,  $10^3$ ,  $5 \times 10^3$ ,  $10^4$ ,  $5 \times 10^4$ , and  $10^5$  counts per second full scale

PERCENT STANDARD DEVIATION: Nominally 1%-3%-10% at full scale

LINEARITY: Better than  $\pm 0.5\%$  of full scale

STABILITY: Better than  $\pm 0.05\%$  of full scale per day at constant temperature

TEMPERATURE COEFFICIENT: 0.05% of full scale per  $^{\circ}\text{C}$

#### INPUT PULSE REQUIREMENTS:

AMPLITUDE: +2V to operate  
 $\pm 100\text{V}$  maximum pulse amplitude  
 $\pm 30\text{V}$  maximum average

RISE TIME: Less than 1 millisecond per volt at +2V level

WIDTH: No maximum limit, minimum width of 200 nsec, input dc-coupled with impedance of approximately 2500 ohms

RECORDER OUTPUT: Binding post connectors on rear panel with rear panel adjustment for recorder full scale output; full scale output adjustment from 0-100 mV

METER: 2-inch edge reading meter with 2% meter movement

OPERATING TEMPERATURE: 0-50 $^{\circ}\text{C}$

POWER REQUIREMENTS: +12V      65mA  
                                 -24V      10mA

SIZE: Standard single width NIM module (1.35 inches wide)

### 3. INSTALLATION

#### 3.1 General Installation Considerations

The 441, used in conjunction with a 401A/402A Bin and Power Supply, is intended for rack mounting; therefore, it is necessary to ensure that vacuum tube equipment operating in the same rack with the 441 has sufficient cooling air circulating to prevent any localized heating of the all-transistor circuitry used throughout the module. The temperature of equipment mounted in racks can easily exceed the recommended maximum unless precautions are taken. The 441 should not be subjected to temperatures in excess of 120 $^{\circ}\text{F}$  (50 $^{\circ}\text{C}$ ).