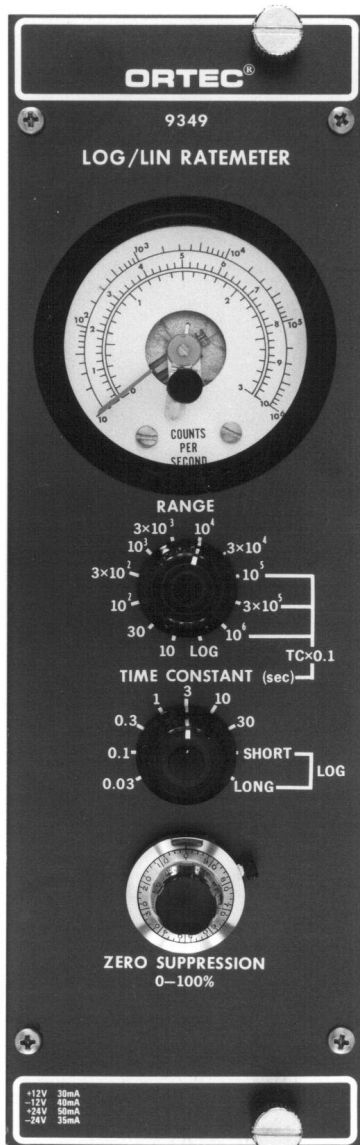


- For counting rate measurements with photons or ion beams
- $10^6$  counts/s full scale
- Linear or logarithmic operation
- Fast negative NIM input



Designed for photon or ion beam applications, the ORTEC Model 9349 Log/Lin Ratemeter provides two modes of operation: linear and logarithmic. The linear mode has 11 full-scale ranges from  $10$  to  $10^6$  counts/s in 1-3-10 steps. The 5-decade log mode covers the range  $10$  to  $10^6$  counts/s in a single span. These choices permit optimum measurement of low, medium, or high steady pulse rates or monitoring of rates that vary through a wide range.

The input signal to the Model 9349 is normally obtained from a discriminator having a NIM-standard, fast-negative logic output signal.

Because of the longer effective scale inherent in its  $240^\circ$  movement and its high accuracy, the unique circular front-panel meter provides excellent readability for both modes.

Zero suppression is provided for up to 100% of any linear range. Any relatively constant background in the counting rate can be subtracted from the data by adjustment of this control. Also, a suppressed zero permits rates that are beyond the nominal full-scale limit to be observed with greater accuracy than could be obtained by switching to a higher range. The choice between 7 linear and 2 log time constants is a further aid to accurate reading of the rate of incoming signals.

In addition to the front-panel meter indications, outputs are provided for both current and voltage recorders, as well as a high-level voltage output for control or monitor applications.

## Specifications

### PERFORMANCE

**LINEAR RANGES** 11 ranges from  $10$  to  $10^6$  counts/s full scale in 1-3-10 steps.

**DEAD TIME**  $<100$  ns on the  $10^6$  range;  $<0.3\%$  of average pulse spacing up to the  $3 \times 10^4$  range;  $\leq 1\%$  on the  $10^5$  and  $3 \times 10^5$  ranges.

**RATED OVERLOAD** Maintains full-scale output for X300 overload or  $10^7$  counts/s, whichever is smaller.

**TEMPERATURE INSTABILITY**  $\leq \pm 0.05\%/^\circ\text{C}$ .

**NONLINEARITY**  $\leq \pm 0.15\%$  from  $10$  to  $3 \times 10^4$  counts/s range;  $\leq \pm 1.5\%$  from  $10^5$ – $10^6$  counts/s.

**TIME CONSTANTS** 7 selectable time constants, 0.03 to 30 s in 1-3-10 steps.

**ZERO SUPPRESSION** 0 to 100% of full scale, nonlinearity  $\leq \pm 0.25\%$ .

**LOGARITHMIC RANGE** One 5-decade range for  $10$  to  $10^6$  counts/s.

**TEMPERATURE INSTABILITY**  $\leq \pm 0.25\%$  of full scale per  $^\circ\text{C}$ .

**ANALOG OUTPUT ERROR**  $\leq \pm 2.5\%$  of full scale.

**STANDARD DEVIATION**  $\sim 15\%$  with Log Short time constant;  $\sim 5\%$  with Log Long time constants.

**SLEWING RATE** Dependent upon input rate; for any rate change, Log Short time constant provides 10 times faster response than Log Long time constant.

### CONTROLS

**RANGE** 12-position switch selects the full-scale range and either linear or logarithmic mode; linear ranges are 0–10 counts/s through 0– $10^6$  counts/s in 1-3-10 steps; log range is  $10$ – $10^6$  counts/s.

**TIME CONSTANT** 9-position switch selects the time constant for the integrating network; 0.03 to 30 s in a 1-3-10 series for all linear ranges; Short and Long for the log range.

**ZERO SUPPRESSION** 10-turn precision potentiometer to suppress the zero-reference level for any linear range from 0 to 100%; the same full-scale span is effective above the preselected zero-reference level.

### INPUT

**INPUT** Rear-panel BNC connector accepts NIM-standard, fast-negative logic signals,  $-600$  to  $-1800$  mV.  $Z_{in} = 50 \Omega$ . Minimum pulse width is 4 ns FWHM.

### OUTPUTS

**PANEL METER**  $240^\circ$  circular movement with 8.9 cm (3.5 in.) deflection; accuracy, 2% of full scale; 3 scale markings; 0–1 and 0–3 for linear ranges and  $10$ – $10^6$  in 5 decades for log range.

# 9349

## Log/Lin Ratemeter

**ANALOG OUTPUTS** BNC connector on rear panel provides 0 to 10 V full scale, DC-coupled with 100- $\Omega$  output impedance.

**RECORDER OUTPUTS** Binding post connectors on rear panel:

**100 mV** Provides voltage output with 100 mV full scale; DC-coupled with 100- $\Omega$  output impedance.

**1 mA** Provides current output of 1 mA full scale; DC-coupled with 10 k $\Omega$  output impedance.

### ELECTRICAL AND MECHANICAL

**POWER REQUIRED** +24 V, 50 mA; -24 V, 35 mA; +12 V, 30 mA; -12 V, 45 mA.

### WEIGHT

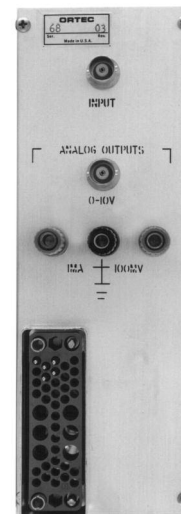
**Net** 1.5 kg (3.5 lb).

**Shipping** 2.5 kg (5.5 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

Model	Description
9349	Log/Lin Ratemeter



Specifications subject to change  
052721

**ORTEC**<sup>®</sup>

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