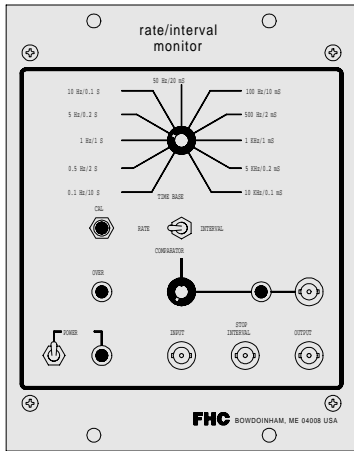


# Rate/Interval Monitor



- **OUTPUT LINEAR WITH EITHER FIRING RATE OR INTER-SPIKE INTERVAL**
- **MEASURES RATE TO 1MHZ AND INTERVALS TO 10,000 SEC**
- **ADJUSTABLE COMPARATOR PROVIDED TO INDICATE WHEN A GIVEN RATE OR INTERVAL IS EXCEEDED**
- **CALIBRATION SIGNAL (5V=500 COUNT) INCLUDED**

Our **Rate/Interval Monitor** provides a convenient means of compressing large amounts of data into short, easily analyzed histograms. Designed to work with the output of our Slope/Height Discriminators or similar TTL output devices, this instrument produces a DC voltage (0-9.99V) that is directly proportional to:

- rate (frequency) of input pulses;
- interval between pulses; or
- interval between pulses applied to two separate inputs

An 11-position time base switch gives the monitor a wide operational range of 1MHz in the RATE mode or 10,000 seconds in the INTERVAL mode. An over-range LED is provided.

The Rate/Interval Monitor has several other useful circuits. A comparator control allows the user to set a 0-10V level which when the output exceeds that level; generates a high TTL level at the COMP output. This signal can be used to trigger other devices based on the selected rate or interval criteria. The instrument also includes a +5V (500 count) CAL signal to simplify chart recorder or readout device calibration.

The Rate/Interval Monitor is line powered and can be used on a bench or conveniently rack mounted using our 40-10-1 Rack Mount Assembly.

## SPECIFICATIONS

**Time Base:** .1, .5, 1, 10, 50, 100, 500, 1000, 5000 and 10,000Hz, set with 11-position rotary switch

**Frequency Range (Rate Mode):** .1Hz to 1MHz

**Interval Range (Interval Mode):** 0.1mSec to 10,000Sec

**Input:** TTL compatible (+5V), 3 decade counter totals input pulses, BNC connector

**Output Range:** 0-9.99VDC, in 10mV increments, LED illuminates if 999 count exceeded

**Output Impedance:** <50 Ohms, short circuit protected, BNC connector

**Stop Interval:** BNC connector. Input +5V signal to stop interval timing, BNC connector

**Comparator Range:** 0 - 10VDC, continuously adjustable, with 1-turn potentiometer

**Comparator Output:** TTL high when comparator value is exceeded, BNC connector

**Calibration:** +5V level (equivalent to 500 counts) at output initiated by pushbutton

**Power Requirements:** 115/230V, 50-60Hz, switch selectable, activated with toggle switch, LED illuminates

**Dimensions:** 5 1/2"w x 7"h x 9"d (14 x 17.8 x 22.9 cm), 4 lb. (1.8 kg.)

## OPERATIONAL DESCRIPTION

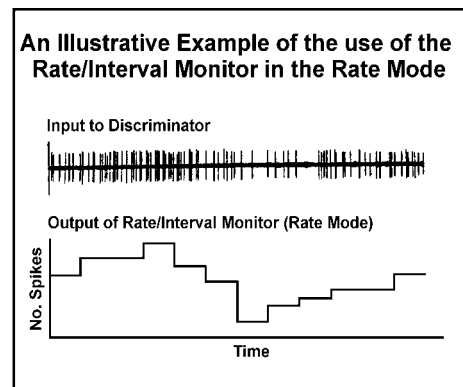
The Rate/Interval Monitor consists of a Schmitt trigger input, a 10KHz clock the output of which can be divided by 1-100,000 to produce timing pulses of selectable frequency, a digital 3 decade counter and a 3 decade digital-to-analog (DAC) converter.

In the RATE mode, the 3 decade counter sums the number of pulses applied to the INPUT and is periodically reset to zero at a rate selected by the TIME BASE switch.

In the INTERVAL mode, the counter counts pulses from the internal clock circuitry. The counter is reset to zero by a pulse applied to the INPUT, whereupon it again begins counting clock pulses until reset by another input pulse. The counter's output is therefore equal to the number of clock pulses occurring between the input pulses.

A second input, STOP INTERVAL, is provided for utilizing the Monitor to time the interval between pulses originating from two separate sources. The leading edge of a pulse applied to the INPUT connector triggers the counter and it starts to count clock pulses as described above; the leading edge of a pulse applied to the STOP INTERVAL stops the counter.

In all three modes of operation, the output of the counter is latched by its reset signal and remains at this value throughout the succeeding count cycle. This latched digital sum is linearly converted to an analog voltage, the scaling of which is such that a counter output ranging from 0 - 999 is converted to a DC voltage ranging from 0 - 9.99V in discrete 10mV increments.



## ORDERING INFORMATION

74-40-5 Rate/Interval Monitor

