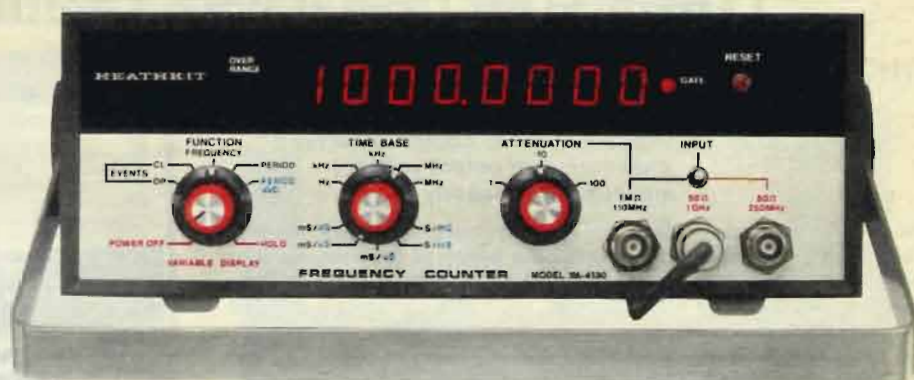




IM-4110 — 110 MHz input



IM-4120 — 110 and 250 MHz inputs



IM-4130 — 110 MHz, 250 MHz and 1 GHz inputs

## High-Performance Frequency Counters

- Frequency, Events, Period and Period Averaging
- Overrange and Gate Lamp Indicators

These frequency counters offer excellent flexibility, accuracy and resolution, PLUS features you simply won't find on others in this price range.

A switchable attenuator on the 110 MHz input provides accurate measurements of large amplitude signals. The time base switch selects the gate time and the resolution of the display. The 4120 and 4130 time bases are controlled by a high quality TCXO (temperature-compensated crystal oscillator) with a temperature stability of  $\pm 1$  ppm and an aging rate of  $< 5$  ppm/yr for excellent stability. (The 4110's crystal oscillator has stability of  $\pm 10$  ppm and an aging rate of  $< 10$  ppm/yr.)

Separate 50-ohm inputs are used for frequency ranges above 110 MHz to maintain low VSWR, while inputs below 110 MHz are

### 12-volt Converter for 4110, 4120 and 4130 Frequency Counters

Mounts inside counter cabinet, permits 12-volt mobile operation of 4110, 4120 and 4130. Can also be fitted with 12 rechargeable NiCad batteries (not included, order below).

**Kit IMA-4130-1**, Shpg. wt. 3 lbs. . . . . **59.95**  
Assembled version of above.

**SMA-4130-1**, Shpg. wt. 3 lbs. . . . . **90.00**

Set of 12 NiCad batteries.

**SMA-4130-2**, Shpg. wt. 4 lbs. . . . . **89.95**

**COMBO SPECIAL!** Save \$74.95! 12-volt converter kit and batteries together. If purchased separately, \$149.90.

**IMS-4130-1**, Shpg. wt. 8 lbs. . . . . **74.95**

1 meg shunted by less than 25 pF. There's a rear panel oscillator input/output jack for an external time base, frequency ratio measurements, or it can be used as a signal source for breadboarding, calibrating or marker applications.

These counters include additional functions — events, period and period averaging. In events OP, the counting circuit increments for each input pulse with the resulting counts displayed. Events CL stops the events count and displays the accumulated total.

In the period mode, the readout displays a single period of the signal.

In the period averaging mode, the counter displays the time of a single period based on a 1000-period average. This results in a more accurate and higher resolution measurement.

A 12-position handle rotates a full 360° for easy storage and mounting. Easy kit assembly and NO-INSTRUMENT calibration. Counters operate on 120/240 VAC (switch-selected), 12 VDC with IMA-4130-1 accessory at left, or portable battery operation with IMA-4130-1 and SMA-4130-2 batteries.

### IM-4110 5 Hz to 110 MHz Counter

Applications include CB, low-band AM and FM, AM and FM broadcast bands, musical instruments, video tape systems, crystals, etc. Has single 110 MHz input.

**Kit IM-4110**, Shpg. wt. 12 lbs. . . . . **189.95**

Assembled and tested version of above.

**SM-4110**, Shpg. wt. 10 lbs. . . . . **330.00**

### IM-4120 5 Hz to 250 MHz Counter

For above applications, plus marine and aircraft radios, 2-meter and 220 FM, general lab and research work, more. Has 5 Hz to 110 MHz and 5 MHz to 250 MHz inputs.

**Kit IM-4120**, Shpg. wt. 12 lbs. . . . . **329.95**

Assembled and tested version of above.

**SM-4120**, Shpg. wt. 11 lbs. . . . . **530.00**

### IM-4130 5 Hz to 1 GHz Counter

For virtually every counting application including 450 FM, Military uses and land mobile. Has three separate inputs—5 Hz to 110 MHz, 5 MHz to 250 MHz and 100 MHz to 1 GHz.

**Kit IM-4130**, Shpg. wt. 12 lbs. . . . . **529.95**

Assembled and tested version of above.

**SM-4130**, Shpg. wt. 10 lbs. . . . . **865.00**

	IM-4110	IM-4120	IM-4130
Frequency Range	5 Hz to 110 MHz	5 Hz to 250 MHz	5 Hz to 1 GHz
Inputs	5 Hz to 110 MHz	5 Hz to 110 MHz, 5 MHz to 250 MHz	5 Hz to 110 MHz, 5 MHz to 250 MHz, 100 MHz to 1 GHz
Input Sensitivity	25 mV RMS	25 mV RMS	25 mV RMS
Input Impedance	1 meg shunted by < 25 pF	50 ohms, VSWR less than 1.5:1 110 MHz, same as 4110	50 ohms, VSWR, less than 2:1 110 MHz, same as 4110 250 MHz, same as 4120
Protection	250 V (DC + peak AC) to 100 kHz	5 Vrms	5 Vrms
Time Base Freq.	10 MHz	4 MHz TCXO	4 MHz TCXO
Aging Rate	< 10 ppm/yr	< 5 ppm/yr	< 5 ppm/yr
Temp. Stability (0 to 40°C ambient)	$\pm 10$ ppm	$\pm 1$ ppm	$\pm 1$ ppm

OTHER IM-4110, 4120 AND 4130 SPECIFICATIONS — FUNCTIONS: Events: 1 to 99,999,999. Period Resolution, 0.1  $\mu$ S. Period Average, 1000 periods. Period Pulse Width, 100 nsec min. Low Frequency Signal Risettime, 1 msec to signals less than 10 Hz. Attenuation, (110 MHz input) x1, x10, x100 fixed compensation. TIME BASE: Setability,  $\pm 0.1$  ppm. OSCILLATOR

CONNECTION: External Input Frequency, 1 MHz. External Input Sensitivity, TTL or 2.5 Vrms for 50-ohm source. External Input Protection, -5 V peak to +10 V peak. Internal Output,  $> 1.5$  V p-p into 50 ohms at 1 MHz. TCXO Warmup, 10 minutes. GATE INTERVAL: Frequency, 1 mS to 10 S (4 mS to 40 S on 1 GHz input). Period, determined by period of input frequency.

Period Average, 1000 periods of input frequency. Display Time, 200 mS to 20 S including a count hold position. Power Requirements: 105-130 VAC or 210-260 VAC (switch-selected). 50-60 Hz at 35 watts; or 9-14 VDC at 2.5 A max. with IMA-4130-1 accessory. Dimensions: 10 1/4" W x 13 1/4" D x 4" H (less handle). Net Weight: 8 lbs.