



High Accuracy, 100kHz and 1MHz Voltage to Frequency Converters

Models 458 and 460

FEATURES

High Stability: 5ppm/°C max, Model 458L

15ppm/°C max, Model 460L

Low Nonlinearity: 100ppm max, Model 458

150ppm max, Model 460

Versatility: Differential Input Stage

Voltage and Current Inputs

Floating Inputs: $\pm 10V$ CMV

Wide Dynamic Range: 6 Decades, Model 460

TTL/DTL Compatible Output

APPLICATIONS

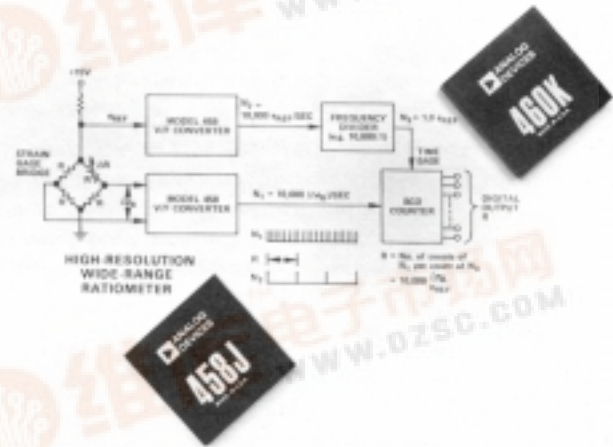
Fast Analog-to-Digital Converter

High Resolution Optical Data Link

Ratiometric Measurements

2-Wire High Noise Immunity Digital Transmission

Long Term Precision Integrator



GENERAL DESCRIPTION

Models 458 and 460 are high performance, differential input, voltage to frequency modular converters designed for analog to digital applications requiring accuracy and fast data conversion. Model 458 offers a 100kHz full scale frequency, guaranteed nonlinearity of $\pm 0.01\%$ maximum over five decades (1Hz to 100kHz) of operation and guaranteed low maximum gain drift in three model selections; model 458L: 5ppm/°C max; model 458K: 10ppm/°C max; and model 458J: 20ppm/°C max. Model 460 offers a 1MHz full scale frequency, guaranteed maximum nonlinearity of $\pm 0.015\%$ over six decades (1Hz to 1MHz) of operation and guaranteed low maximum gain drift in three selections; model 460L: 15ppm/°C max; model 460K: 25ppm/°C max; and model 460J: 50ppm/°C max. Model 460L is the industry's first 1MHz V/F converter to offer 15ppm/°C maximum gain drift.

The differential input stage of models 458 and 460 provide the versatility of either direct interface to off-ground 0 to +11V input signals with common mode voltages (CMV) to $\pm 10V$, as well as ground referenced positive, 0 to +11V or negative, 0 to -11V signals. Both models also accept positive current signals: 0 to +0.5mA, model 458; 0 to +1mA, model 460 for current to frequency (I/F) applications.

The rated performance of both models 458 and 460 is achieved without the need for external components or adjustments. Optional adjustments are available for trimming full scale frequency and the input offset voltage.

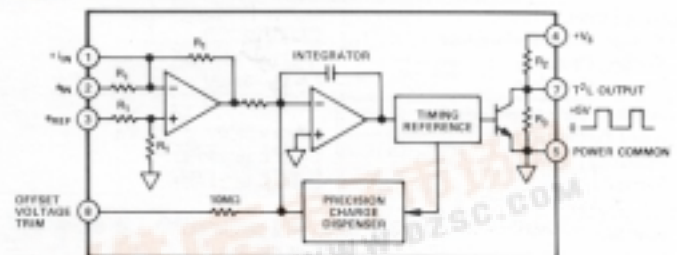
WHERE TO USE MODELS 458 AND 460

The combination of low gain drift, low nonlinearity and the versatility of a differential input with both high speed (100kHz/1MHz) models, offer excellent solutions to a wide variety of demanding applications; in high speed remote data acquisition systems - two wire data transmission over long wires; in 5½ digit DVM's - featuring high

resolution A/D conversion, monotonic performance, no missing codes and high noise rejection; in strain gage bridge weighing applications - accurate ratiometric measurements over wide dynamic range.

DESIGN APPROACH - PRECISION CHARGE BALANCE

Models 458 and 460 incorporate a superior charge balance design that result in high linearity and temperature stability - see Figure 1. Both models accept unipolar, single-ended voltage or current input signals directly. By offsetting the input using the current terminal, models 458 and 460 will accept bipolar input voltages up to $\pm 5V$.



MODEL	FULL SCALE OUTPUT	R ₁	R ₂	R ₃
458	100kHz	20K	10K	4.7K
460	1Mhz	10K	2K	910

Figure 1. Block Diagram – Models 458,560



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