

FORCE SENSORS

Introduction

Kavlico force transducers consist of precisely machined spring and internally placed LVDT(s). The compression or tension movement of the spring deflects the LVDT. The voltage output and signal is calibrated to correspond to the force input. Force sensors can be supplied as single or multiple channel devices.

All Kavlico force transducer are custom designed for the load and performance requirements of each aircraft platform.

As the world's largest supplier of aircraft force transducers, Kavlico force transducers are used in a multitude of commercial and military aircraft applications



Features and Benefits

- Unique, ultra lightweight and compact designs
- Ideal for cockpit control applications
- Manufactured with high reliability LVDT sensors
- Extremely low zero-shift over the operating temperature range
- Low TC over temperature range of -80°F to +400°F
- Superior long-term stability over transducer life span
- Built-in bi-directional mechanical stop
- Wide operating load range of ± 10 lbs. to $\pm 2,000$ lbs. (tension and compression)
- Qualified per RTCA/DO-160 and MIL-STD-810
- Balanced output in tension and compression
- Dual load paths
- High reliability (MTBF of 1,000,000 hrs. typical)

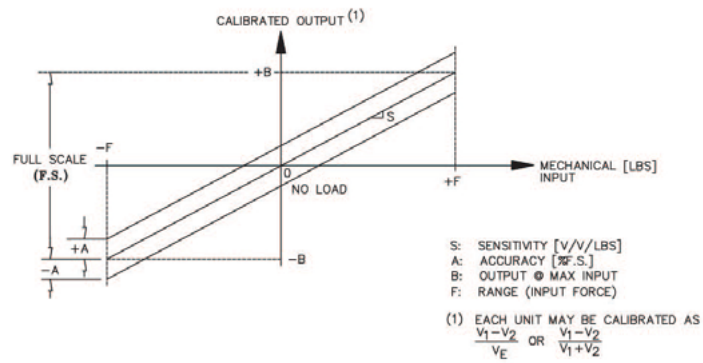
Applications

- Pilot input load for flight data recorder
- Pilot input load for flight control electronics
- Aircraft linkage for limiting flight loads

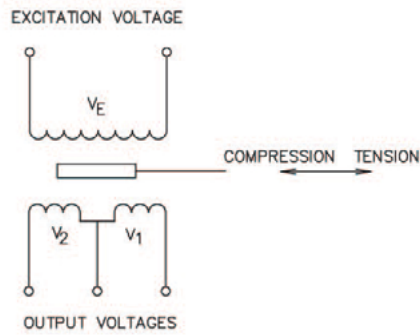


OUTPUTS AND SCHEMATICS

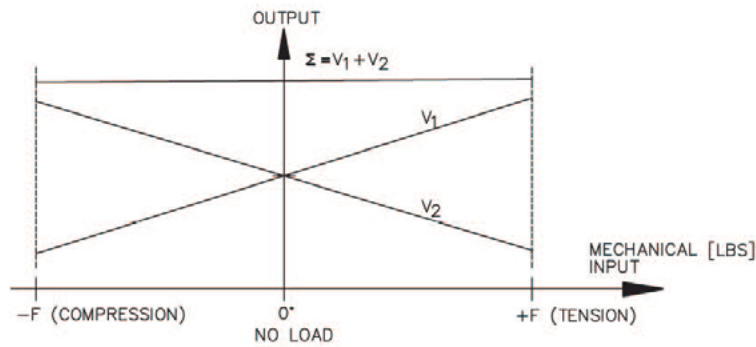
Typical Output (Calibrated Range)



Electrical Schematic



Nominal Individual Output





Sensitivity

The slope of a best-fit straight line drawn through the output data. A force sensor is a radiometric device and the sensitivity should be expressed as the ratio of the volts out (V1-V2), per volt in (VE), per pound of displacement (V/V/lbs).

Linearity

The maximum deviation of any calibration point from a specified straight line. The error is usually expressed as a percentage of Full Scale output. The most commonly used line is the "Best Fit Straight Line" (BFSL).

Crosstalk

The term used for multiple channel units to describe the voltage produced in the secondary of one channel by the primary excitation of another channel.

Temperature Coefficient

The % change in the force sensor sensitivity over a temperature range. Usually defined as a percentage per 100°F max.
Example: 0.25%/100°F.

Accuracy

The maximum allowed deviation from the nominal output, when the output is taken per the previously stated sensitivity definition. Typically specified as a ± percent of full scale.

Tracking

The uniformity of performance between channels of multiple channel force sensors. Each channel's output is compared and the maximum difference between any two channels is termed "tracking." Tracking is normally expressed as a percentage of Full Scale.

Full Scale

The algebraic difference between the nominal outputs at the ends of the electrical stroke. (Ref. Instrument Society of America, ISA - S37.1 - 1975)

Revised 02/21/18

Sensata Technologies, Inc. ("Sensata") data sheets are solely intended to assist designers ("Buyers") who are developing systems that incorporate Sensata products (also referred to herein as "components"). Buyer understands and agrees that Buyer remains responsible for using its independent analysis, evaluation and judgment in designing Buyer's systems and products. Sensata data sheets have been created using standard laboratory conditions and engineering practices. Sensata has not conducted any testing other than that specifically described in the published documentation for a particular data sheet. Sensata may make corrections, enhancements, improvements and other changes to its data sheets or components without notice.

Buyers are authorized to use Sensata data sheets with the Sensata component(s) identified in each particular data sheet. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER SENSATA INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY THIRD PARTY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT, IS GRANTED HEREIN. SENSATA DATA SHEETS ARE PROVIDED "AS IS". SENSATA MAKES NO WARRANTIES OR REPRESENTATIONS WITH REGARD TO THE DATA SHEETS OR USE OF THE DATA SHEETS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ACCURACY OR COMPLETENESS. SENSATA DISCLAIMS ANY WARRANTY OF TITLE AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, QUIET POSSESSION, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO SENSATA DATA SHEETS OR USE THEREOF.

All products are sold subject to Sensata's terms and conditions of sale supplied at www.sensata.com SENSATA ASSUMES NO LIABILITY FOR APPLICATIONS ASSISTANCE OR THE DESIGN OF BUYERS' PRODUCTS. BUYER ACKNOWLEDGES AND AGREES THAT IT IS SOLELY RESPONSIBLE FOR COMPLIANCE WITH ALL LEGAL, REGULATORY AND SAFETY-RELATED REQUIREMENTS CONCERNING ITS PRODUCTS, AND ANY USE OF SENSATA COMPONENTS IN ITS APPLICATIONS, NOTWITHSTANDING ANY APPLICATIONS-RELATED INFORMATION OR SUPPORT THAT MAY BE PROVIDED BY SENSATA.

Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

CONTACT US

Americas

1461 Lawrence Drive,
Thousand Oaks, CA 91320
+1 (805) 716-0322
info@kavlico.com