
**FlexiForce:** ***(Noun)***
Pronunciation: flex'ē'fôrs

1. a: a versatile, durable piezoresistive force sensor that can be made in a variety of shapes and sizes; b: a piezoresistive sensing device in which resistance is inversely proportional to applied force;
2. a customizable, economical force measurement tool that is easily integrated into OEM products;
3. a: a patented, ultra-thin (0.008"), flexible printed circuit that senses contact force; b: a force and load sensor that is available in three standard force ranges, suiting a variety of applications for research and product development/testing.

**FlexiForce®**
The Leader in Standard & Custom
OEM Force Sensing Solutions

Tekscan

The smart sensing solution

## Providing you with the right force sensing solution.

*FlexiForce*®, a division of Tekscan, is committed to providing the most advanced, thin, tactile force and pressure sensors in the world. These sensors are accurate, simple to use, and cost-effective.

Our knowledgeable, experienced staff works with companies of all sizes to deliver standard and custom sensing solutions for a wide variety of OEM products and applications. We dedicate ourselves to identifying and meeting our customers' needs by producing sensing solutions of the highest quality and value.

## Applications:

**Medical Equipment Manufacturers**
- Drug delivery systems
- Surgical studies & tools
- Diagnostic devices

**Automotive Manufacturers**
- Braking, impact, vibration
- Occupant detection
- Airbag force on occupant

**Recreational/Entertainment Industry**
- Video games/virtual reality
- Sports equipment
- Training devices

**Industrial**
- Security devices
- Packaging and sealing
- Automation

**Other Studies**
- Grip forces
- Equipment monitoring
- Robotics
- And much more!

**The applications are limited only by your imagination!**


APPLIANCE

SECURITY DEVICES

COMPUTER INTERFACES

GAMING APPLICATIONS

## Serving many applications with proven solutions.

Founded in 1987, Tekscan is the world's leading provider of advanced tactile force and pressure measurement sensors and systems. Tekscan's *FlexiForce* sensors are at work in a variety of applications, performing a multitude of functions. The sensors are utilized to:

- Detect and measure a relative change in force or applied load
- Detect and measure the rate of change in force
- Identify force thresholds and trigger appropriate action
- Detect contact and/or touch

## An integral part of your product development.

The *FlexiForce* product line was developed in response to the unique needs of companies that require cost-effective force sensing solutions in their products. We offer standard and custom-designed sensors to satisfy the needs of your application. Our team works closely with you throughout each stage of the design process. This allows you to concentrate on your core business while we work on what we do best: developing the right sensors for you.

## Superior sensors plus superior support and service.

We are as proud of our support and service capabilities as we are of our technology. As a customer, you can be confident that our experienced, qualified staff will work with you to define, develop, and integrate a unique sensing solution. The accessibility of our technical support team ensures that any issues you have will be solved promptly and effectively.

## Get a better sense of our offerings:

### *FlexiForce* Sensor (A201 - Standard Model)

With its flexible, paper-thin construction, the standard *FlexiForce* sensor can measure force between virtually any two surfaces. It is also durable enough to stand up to most environments. The highly adaptive A201 model, composed of polyester material and semi-conductive inks, is a piezoresistive sensing device which can be trimmed to various lengths.

### *FlexiForce* Sensor (High-Temp Model)

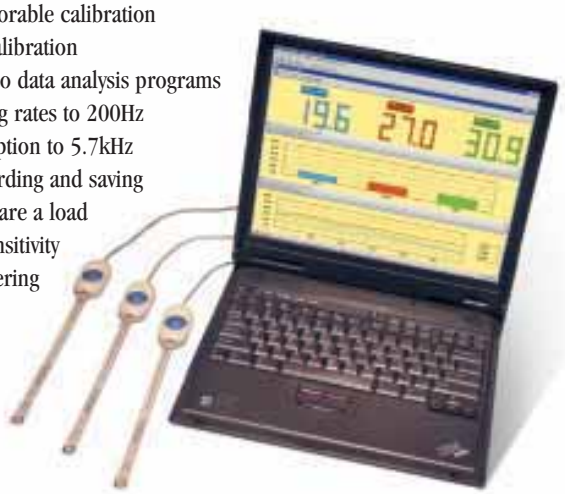
Our new High-Temp *FlexiForce* sensors have been tested up to 420 degrees Fahrenheit, opening up many new doors for a variety of demanding applications.

### *ELF™* Systems & Sensors

Both the *ELF™* and Multi-Handle *ELF™* (*MELF™*) systems combine Tekscan's *FlexiForce* single-element force sensors with advanced electronics to create cost-effective force and load measurement systems that are both simple and powerful. Both systems include Windows®-compatible software, serial-interface electronics, and three *FlexiForce* (model B201) sensors. The *ELF* system allows you to view and record one channel of force data, while the *MELF* System enables you to view and record up to 16 channels of force data with *FlexiForce* single-point sensors.

### Key features of the *ELF* system include:

- Real-time data capture/display
- Simple and storable calibration
- Multi-point calibration
- ASCII output to data analysis programs
- Eight sampling rates to 200Hz
- High-speed option to 5.7kHz
- "Movie" recording and saving
- Capability to tare a load
- Adjustable sensitivity
- Internal triggering




PUMP

EXERCISE

IMPACT

AUTO

## Standard Sensor Specifications

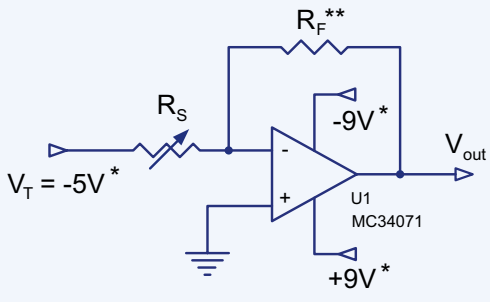
| | A201 Model* | B201 Model** |
|---|---|---|
| **Physical Properties** | | |
| Thickness | 0.008" (0.208mm) | |
| Length | ≈ 8" (203mm)<br>6" (152mm)<br>4" (102mm)<br>2" (51mm) | 9" (229mm)<br>end-to-end |
| Width | 0.55" (14mm) | |
| Sensing Area | 0.375" diameter (9.53mm) | |
| Connector | 3-pin male square pin<br>(Center pin not used) | Interface to *ELF* Data<br>Acquisition System |
| **Typical Performance** | | |
| Linearity (Error) | <+/- 5% | |
| Repeatability | <+/- 2.5% of full scale<br>(conditioned sensor, 80% force applied) | |
| Hysteresis | < 4.5% of full scale<br>(conditioned sensor, 80% force applied) | |
| Drift | < 3% per logarithmic time scale<br>(constant load of 90% sensor rating) | |
| Response Time | < 5 microseconds<br>(impact load, output recorded on oscilloscope) | |
| Operating Temperature | 15° F to 140° F (-9° C to 60° C)<br>High-Temp sensors: -20° F to 420° F<br>(-28° C to 216° C) | |
| Force Ranges | 0-1 lb. (4.4 N)<br>0-25 lbs. (110 N)<br>0-100 lbs. (440 N)* | Low (L)<br>Medium (M)<br>High (H) |

*To measure forces above 100 lbs. (up to 1000 lbs.), apply a lower drive voltage and reduce the resistance of the feedback resistor (1 kΩ min). See recommended circuit. **See recommended maximum force chart.

### B201 (*ELF* sensor) Recommended Maximum Force Chart

| | High Gain | Low Gain |
|---|---|---|
| B201-L | 0-1 lb. (4.4 N) | 0-25 lbs. (110 N) |
| B201-M | 0-25 lbs. (110 N) | 0-150 lbs. (667 N) |
| B201-H | 0-150 lbs. (667 N) | 0-1000 lbs. (4400 N) |


### Typical Drive Circuit for A201 Sensor




- $V_{out} = -V_T * (R_F/R_S)$
- * Supply Voltages should be consistent
- ** Reference Resistance $R_F$ is 1kΩ to 100kΩ
- Sensor Resistance $R_S$ at no load is > 5MΩ
- Max recommended current: 2.5 mA