

# FlexiForce™

## Standard Model A201

The FlexiForce A201 is our standard sensor and meets the requirements of most customers. The A201 is a thin and flexible piezoresistive force sensor that is available off-the-shelf in a variety of lengths for easy proof of concept. These ultra-thin sensors are ideal for non-intrusive force and pressure measurement in a variety of applications. The A201 can be used with our test & measurement, prototyping, and embedding electronics, including the OEM Development Kit, FlexiForce Quickstart Board, and the ELF™ System\*. You can also use your own electronics, or multimeter.

### Benefits

- Thin and flexible
- Easy to use
- Convenient and affordable

### Physical Properties

Thickness	0.203 mm (0.008 in.)
Length	191 mm (7.5 in.)** (optional trimmed lengths: 152 mm (6 in.), 102 mm (4 in.), 51 mm (2 in.))
Width	14 mm (0.55 in.)
Sensing Area	9.53 mm (0.375 in.) diameter
Connector	3-pin Male Square Pin (center pin is inactive)
Substrate	Polyester
Pin Spacing	2.54 mm (0.1 in.)

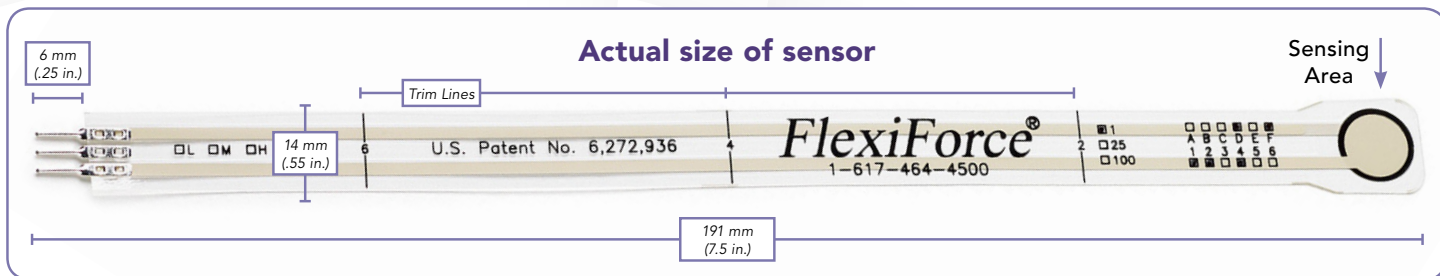
✓ ROHS COMPLIANT

\* Sensor will require an adapter/extender to connect to the ELF System. Contact your Tekscan representative for assistance.

\*\* Length does not include pins. Please add approximately 6 mm (0.25 in.) for pin length for a total length of approximately 197 mm (7.75 in.).

	Typical Performance	Evaluation Conditions
Linearity (Error)	< ±3% of full scale	Line drawn from 0 to 50% load
Repeatability	< ±2.5%	Conditioned sensor, 80% of full force applied
Hysteresis	< 4.5% of full scale	Conditioned sensor, 80% of full force applied
Drift	< 5% per logarithmic time scale	Constant load of 111 N (25 lb)
Response Time	< 5µsec	Impact load, output recorded on oscilloscope
Operating Temperature	-40°C - 60°C (-40°F - 140°F)	Convection and conduction heat sources
Acceptance Criteria	±40% sensor-to-sensor variation	Output considered at test pressure
Durability	≥ 3 million actuations	Perpendicular load, room temperature, 22 N (5 lb)
Temperature Sensitivity	0.36%/°C (± 0.2%/°F)	Conductive heating

\*\*\*All data above was collected utilizing an Op Amp Circuit (shown on the next page). If your application cannot allow an Op Amp Circuit, visit [www.tekscan.com/flexiforce-integration-guides](http://www.tekscan.com/flexiforce-integration-guides), or contact a FlexiForce Applications Engineer.



### Standard Force Ranges as Tested with Circuit Shown

4.4 N (0 - 1 lb)

111 N (0 - 25 lb)

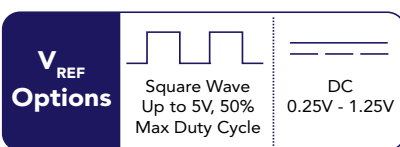
445 N (0 - 100 lb)†

† This sensor can measure up to 4,448 N (1,000 lb). In order to measure higher forces, apply a lower drive voltage (-0.5 V, -0.25 V, etc.) and reduce the resistance of the feedback resistor (1kΩ min.). To measure lower forces, apply a higher drive voltage and increase the resistance of the feedback resistor.

Sensor output is a function of many variables, including interface materials. Therefore, Tekscan recommends the user calibrate each sensor for the application.

### Recommended Circuit

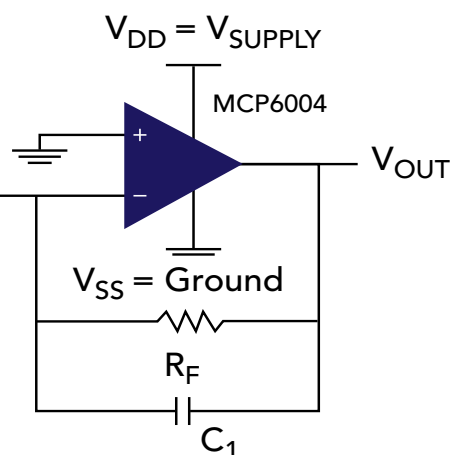
$$V_{OUT} = -V_{REF} * (R_F / R_S)$$



$R_{FEEDBACK} (R_F) = 100k\Omega$   
POTENTIOMETER

$C_1 = 47 \text{ pF}$

100K potentiometer and 47 pF are general recommendations; your specific sensor may be best suited with a different potentiometer and capacitor. Testing should be performed to determine this.



- Polarity of  $V_{REF}$  must be opposite the polarity of  $V_{SUPPLY}$
- Sensor Resistance  $R_S$  at no load is typically  $>1M\Omega$
- Max recommended current is 2.5mA



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