SpectraFlex FLX

New Features

Compared to the Original Flex Sensor, **SpectraFlex**:
- has Better Repeatability!
- has Less Signal Drift!
- is More Flexible!
- and has an even Lower Profile!

(see comparison table for more details)

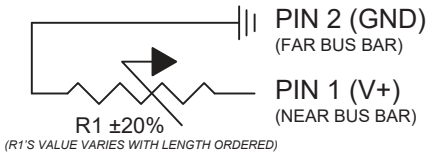
Mechanical Specifications

-Life Cycle: >2 million cycles with a bend angle of 180° over an 8mm (0.315”) radius
-Recommended Bend Radius: 2.5mm to 8mm
-Thickness: 0.13mm (0.005")
-Temperature Range: -35°C to +80°C

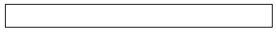
Electrical Specifications

-Flat Resistance: Varies with length, see Dimensional Diagram below
-Bend Resistance: greater than or equal to 2 times the flat resistance at 180° on an 8mm (0.315”) radius *(see "How it Works" below),* the 55mm version can achieve greater than or equal to 4 times the flat resistance.
-Power Rating (depending on size, varies with length and temperature): 1 Watt max. @ 25°C, 0.5 Watt recommended

Electrical Schematic



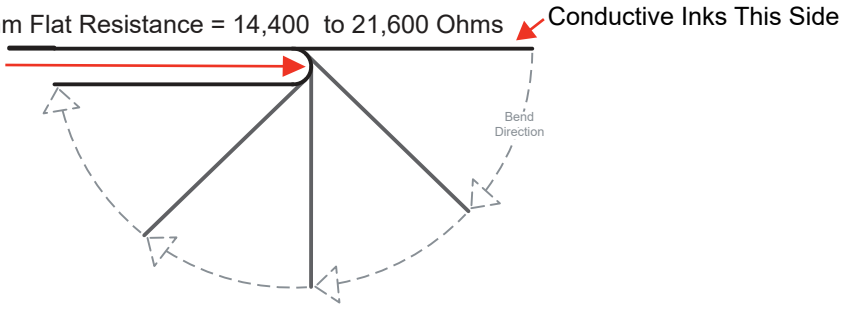
Material Cross-section



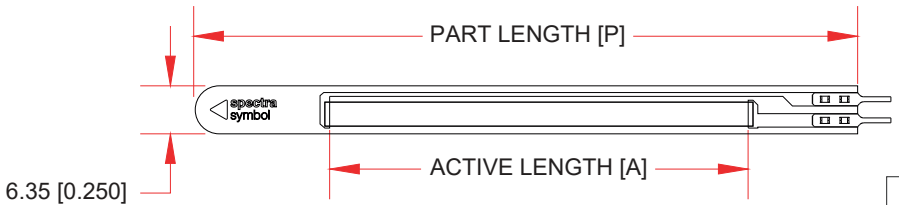
** sensor only - pins and connector will be thicker and the thickness is dependent on the type of pin/connector selected*

How It Works

An 180° bend with a 2.5mm to 8mm radius equates to a value greater than 2x the Flat Resistance



Dimensional Diagram - Stocked Sizes



A	55.37mm 2.165"	95.25mm 3.750"
P	87.63mm 3.450"	127.51mm 5.020"
Ω FLAT	12,000	18,000

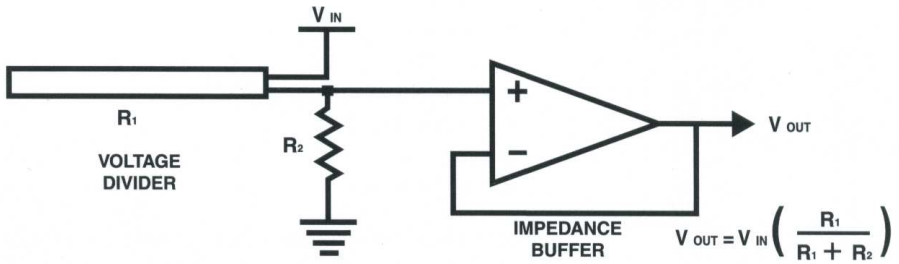
How to Order - Stock SpectraFlex Sensors

FLX	—	L	—	0095	—	183	—	ST
Series		**Model**		**Active Length**		**Resistance**		**Connectors**
FLX = SpectraFlex		L = Linear		0055 = 55.37mm 0095 = 95.25mm		Active Length: 55mm 123 = 12 KOhm Active Length:95mm 183 = 18 KOhm		ST = Solder Tabs MP = Male Pins RH = Plain Housing RLU = Latch Up RLD = Latch Down

Comparison Chart - Original Flex Sensor [FS] vs SpectraFlex [FLX]

SPECIFICATION	FS	FLX
Substrate: the base material of the sensor	Polyimide	
Finished Overall Thickness:	0.43mm [0.017”]	0.13mm [0.005”]
Flat Resistance (Ohms):	10,000 ±30%	95mm = 18,000 ±20% 55mm = 12,000 ±20%
Resistance Change Multiplier: *defined as a function of bend radius (8mm) and angular deflection (180°)*	>2x	95mm = >2x 55mm = >4x
Repeatability: *under controlled conditions*	Never characterized.	±2%
Bidirectional: *defined as measurable and repeatable output when bent in either direction*	No, should only be bent in the direction shown in the “How it Works” section.	
Operating Temperature:	-35°C to +80°C	-35°C to +80°C *(currently testing up to 150°C)*
Power Rating: *5VDC, +25°C*	0.5 Watt continuous, 1 Watt Peak	
Customizable:	Yes, will require extra NRE and Tooling charges.	

BASIC FLEX SENSOR CIRCUIT:

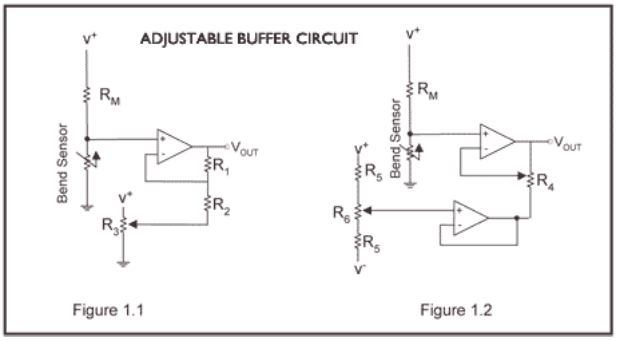


Following are notes from the ITP Flex Sensor Workshop

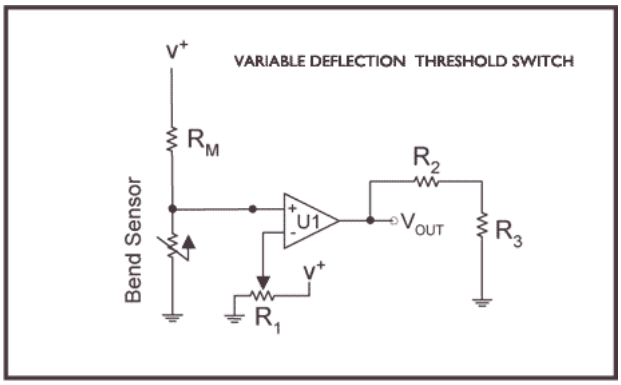
"The impedance buffer in the Basic Flex Sensor Circuit (above) is a single-sided operational amplifier, used with these sensors because the low bias current of the op-amp reduces error due to impedance of the flex sensor as voltage divider. Suggested op-amps are the LM358 or LM324."

"You can also test your flex sensor using the simplest circuit, and skip the op-amp."

"Adjustable Buffer - a potentiometer can be added to the circuit to adjust the sensitivity range."



"Variable Deflection Threshold Switch - an op-amp is used and outputs either high or low depending on the voltage of the inverting input. In this way, you can use the flex sensor as a switch without going through a microcontroller."



"Resistance to Voltage Converter - use the sensor as the input of a resistance to voltage converter using a dual-sided supply op-amp. A negative reference voltage will give a positive output. Should be used in situations when you want to output at a low degree of bending."