

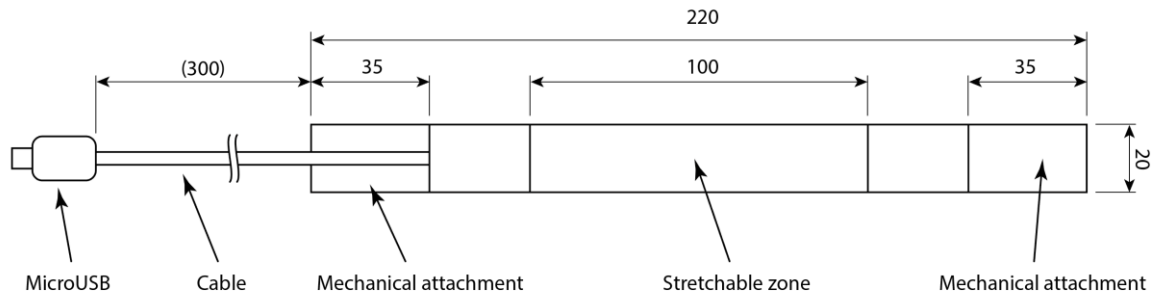
## Elastomer stretch sensor (04D0010)

Made from high quality elastomer materials, the LEAP Technology stretch sensor is a versatile, **highly elastic capacitive strain gauge**.

- Highly stretchable sensor enables unobtrusive motion capture of human, machines, and complex surfaces;
- Capacitive sensing characteristic ensures accurate and repeatable measurements;
- Easy textile integration due to its low profile and textile based cabling;
- Inherently tolerant to shock, vibration and misalignment;
- Minimum response to applied surface pressure;
- Washable.



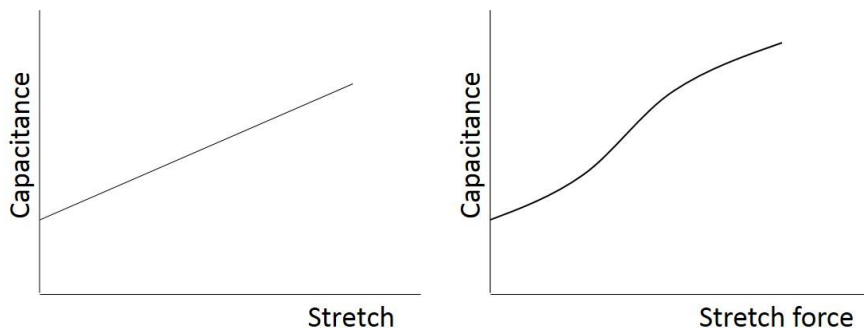
## Dimensions (mm)



Note: Stretchable zone thickness: 0.6mm

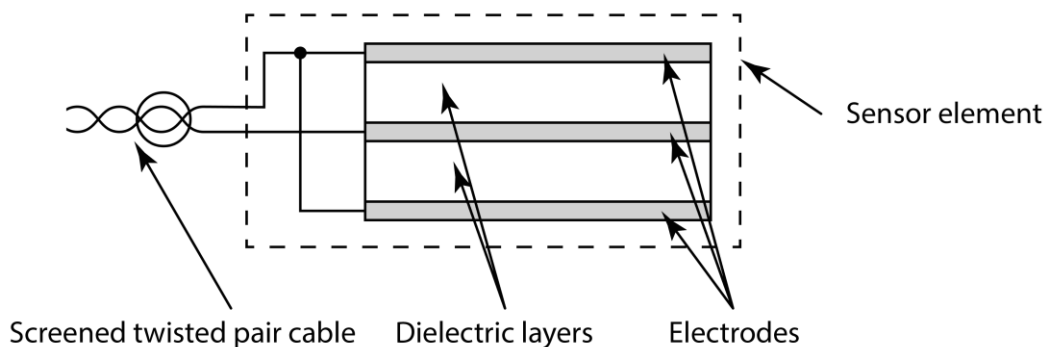
## Working principle

The sensor's capacitance change to stretch or displacement is highly linear and repeatable. The response to applied force is non-linear, though highly repeatable, owing to the non-linear modulus of the materials used in the construction of the sensor.



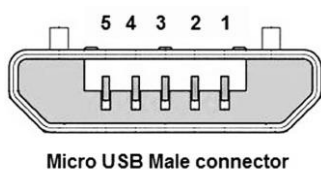
## Internal construction

The sensor is constructed with three electrodes, the outer two of which are connected to the screen of the coaxial cable. This is to allow electronics to measure the capacitance in such a way that minimises capacitive coupling to other objects. This is especially useful in wearable devices.



### MicroUSB connector pins

In cases where a MicroUSB connector is supplied, the pins are connected as follows:

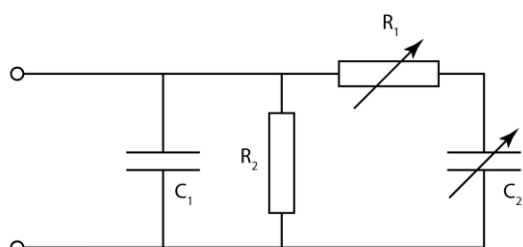


Pin	Connection
1	Centre electrode
4	Outer electrodes
5	Cable screen*

### Specifications

Parameter	Value	unit
Maximum stretch	80	mm
Capacitance at rest* ( $C_{2min} + C_1$ )	1	nF
Capacitance at full stretch* ( $C_{2max} + C_1$ )	5	nF
Series resistance – fluctuating ( $R_1$ )	10 to 100	k $\Omega$
Parallel resistance ( $R_2$ )	<1	G $\Omega$
Load at maximum stretch*	6	N
Weight*	6	grams

**\*Indicative figures.** These sensors are highly customisable in shape, size, stretch, sensitivity, connections and encapsulation type. Please contact us for custom versions and specific product development and testing needs.



Equivalent electric circuit

### Measuring the capacitance

It is recommended to use a constant current charging circuit to measure the capacitance in such a way that makes the measurement insensitive to the fluctuating value of  $R_1$ . LEAP Technology supply such electronics for measuring the capacitance and converting it into the units of choice. Please contact us to learn more.

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