



# FS20 Series Load Cells

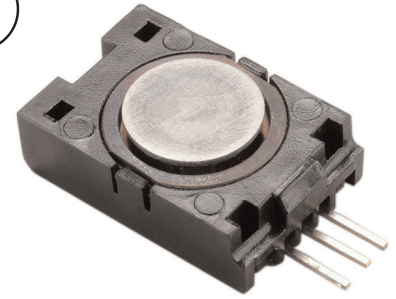
## LOW COST

Compression Forces from 750 to 1500 Grams Force

High Level Output

Interchangeable

Industry Standard Packaging



## DESCRIPTION

**The FS20 Series** Low Cost Compression Force Sensor creates new markets previously unrealizable due to cost and performance constraints. This series raises the bar in price and performance. MSI Sensors' proprietary Microfused™ technology, derived from demanding aerospace applications, employs micro-

machined silicon piezoresistive strain gages fused with high temperature glass to a high performance stainless steel substrate. Microfused™ technology eliminates age-sensitive organic epoxies used in classical load cell designs providing excellent long term span and zero stability.

Operating at exceedingly low strains, Microfused™ technology provides gage factors greater than 100, an essentially unlimited cycle life expectancy, superior resolution, exceedingly high over-range margins without the need for stops and a ratiometric span of 3V. Microfused™ sensors are used in a variety of applications including bathroom scales, paint sprayers and safety-critical automotive brake sensors.

Unlike competitive designs which use a pressure capsule embedded within a silicone gelfilled cavity the FS20 measures direct force. The FS20 is therefore not subject to lead-die fatigue failure common with competitive designs. The FS20 is the OEM designer's dream-come-true; cost-optimized to bring your OEM products to life whether you need thousands or millions of load cells annually. Although the standard model is ideal for a wide range of applications, our dedicated design team at our Load Cell Engineering Center is ready to provide you with custom designs for your OEM applications. The FS20 is fully thermally compensated for changes in zero and span with respect to temperature and offers normalized zero and span for interchangeability. Consult MSI for uncompensated super low cost variants of the FS20.

## FEATURES

- ◆ Low cost
- ◆ Small size
- ◆ Low noise
- ◆ Robust: high overrange capability
- ◆ High reliability
- ◆ Low deflection
- ◆ Essentially unlimited cycle life expectancy
- ◆ Low off center errors
- ◆ Fast response time
- ◆ Industry standard packaging
- ◆ 750 to 1500 gram force ranges

## APPLICATIONS

- ◆ Robotics end-effectors
- ◆ Variable force control
- ◆ Load and compression sensing
- ◆ Pumps
- ◆ Contact sensing
- ◆ Weighing
- ◆ Household appliances

### CE compliant per the following specifications:

IEC61000-4-2	[4 KV/4 KV (Air/Contact)]
IEC61000-4-3	(3 V/m)

internet:www.msisensors.com  
Tel: 1-757-766-1500  
North America Toll Free: 1-800-745-8008  
Fax: 1-757-766-4297  
RevB 5/9/05



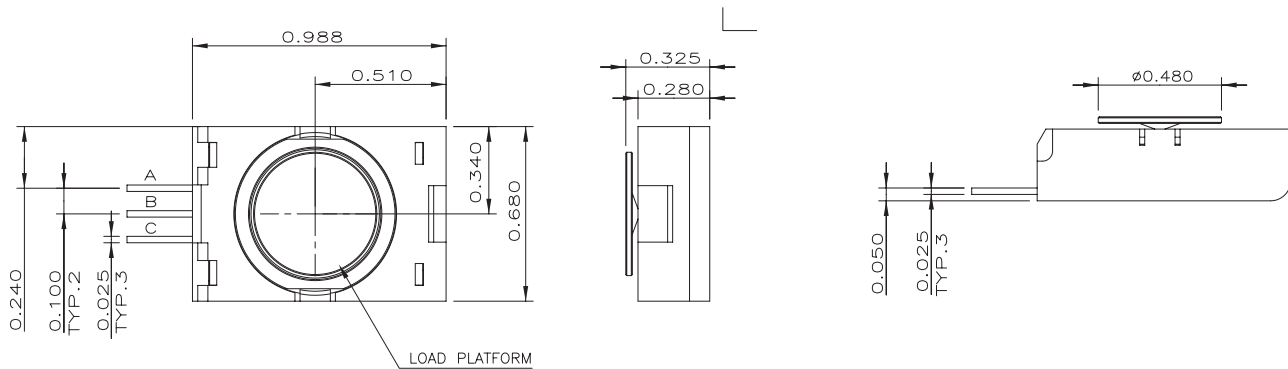
# FS20 Series Load Cells

## performance specifications

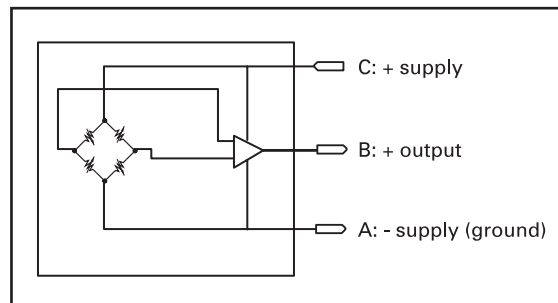
Standard ranges FS20	1.5, 3 Lbf (750, 1500 Grams Force) Compression
Maximum Overload	10 Lbf (4.5 Kgf)
Recommended Excitation Voltage( Amplified/Ratiometric)	3.3 to 5.0 VDC (1)
Full Scale Output Span (FSO) (Amplified/Ratiometric)	1 to 4 VDC at 5 VDC excitation
Output at No Load (Zero Output)	+1 V +/- 50 mV
Combined Non-linearity, Hysteresis and Nonrepeatability	<+/- 1% FSO
Creep 20 Minutes at Full Rated Input	0.5% FSO Typical
Operating Temperature Range	0° C to 70° C
Temperature Compensation	5° C - 50° C
Thermal Zero Shift	<+/-0.05%FS/°C
Thermal Sensitivity Shift	<+/-0.05%FS/°C
Storage Temperature Range	- 20° C to 85° C
Humidity	0 - 90% RH
Deflection at Rated Load	< 0.05 mm
Isolation Resistance	> 50 Mohms@250 VDC

1) Higher excitation voltages available on request.

## dimensions



### High Level Amplified Output



## ordering information

Family	Body	Output	Connection	Specials	Range	Multiplier	Units
Sample PN: FS	20	5	0	0000	1500	-	G
FS20: Compression		5: 1 - 4 V FSO @ 5 VDC input	0 = Pin output	Reserved for custom designs	FS20: 750, 1500 gram-force	none	G = Gram-force