



## FS20

### Low Force Compression Load Cell

#### SPECIFICATIONS

- 500 to 5000 Grams-Force
- Amplified Output
- Interchangeable
- Industry Standard Packaging
- CE Compliance

The FS20 is a low compression force sensor that creates new markets previously unrealizable due to cost and performance constraints. The FS20 offers normalized zero and span for interchangeability and is thermally compensated for changes in zero and span with respect to temperature.

The FS20 incorporates TE's proprietary Microfused technology which employs micromachined 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 traditional load cell designs providing excellent long term span and zero stability. The FS20 measures direct force and is therefore not subject to lead-die fatigue failure common with competitive designs which use a pressure capsule embedded within a silicone gel-filled cavity. Operating at very low strains, Microfused technology provides an essentially unlimited cycle life expectancy, superior resolution, and high over-range capabilities.

The FS20 brings your OEM product 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.

Please refer to the FC22 and FC23 for higher force applications.

#### FEATURES

- Small Size, Low Noise
- Robust, High Reliability
- High Over-Range Capability
- Low Deflection
- Essentially Unlimited Cycle Life Expectancy
- Low Off Center Errors
- Fast Response Time
- Industry Standard Packaging
- 500 to 5000 Grams-Force Range
- Reverse Polarity Protected

#### APPLICATIONS

- Robotics End-Effectors
- Variable Force Control
- Load and Compression Sensing
- Medical Pumps
- Contact Sensing
- Weighing
- Household Appliances

## STANDARD RANGES

| Range     | Grams-Force |
|-----------|-------------|
| 0 to 0500 | •           |
| 0 to 0750 | •           |
| 0 to 1000 | •           |
| 0 to 1500 | •           |
| 0 to 2000 | •           |
| 0 to 3000 | •           |
| 0 to 5000 | •           |

## PERFORMANCE SPECIFICATIONS

Supply Voltage: 5.0V, Ambient Temperature: 25°C (unless otherwise specified). TE Connectivity reserves the right to update and change these specifications without notice.

| PARAMETERS                    | MIN   | TYP     | MAX   | UNITS     | NOTES     |
|-------------------------------|-------|---------|-------|-----------|-----------|
| Excitation Voltage            | 4.975 | 5       | 5.025 | Vdc       |           |
| Zero Output (FS2030)          | 0.45  | 0.5     | 0.55  | Vdc       |           |
| Zero Output (FS2050)          | 0.95  | 1       | 1.05  | Vdc       |           |
| Output Span (FS2030)          | 3.9   | 4       | 4.1   | Vdc       |           |
| Output Span (FS2050)          | 2.9   | 3       | 3.1   | Vdc       |           |
| Non-Linearity                 | -1    |         | 1     | %FSO      |           |
| Zero Return                   | -0.80 |         | 0.80  | %FSO      |           |
| Span Repeat                   | -0.80 |         | 0.80  | %FSO      |           |
| Hysteresis                    | -0.80 |         | 0.80  | %FSO      |           |
| Thermal Zero Shift            | -0.05 |         | 0.05  | %FSO/°C   | 1         |
| Thermal Sensitivity Shift     | -0.05 |         | 0.05  | %FSO/°C   | 1         |
| Zero Drift                    | -0.5  |         | 0.5   | %FSO      | 3 minutes |
| Creeping                      | -0.5  |         | 0.5   | %FSO      | 3 minutes |
| Isolation Resistance (250Vdc) | 50    |         |       | MΩ        |           |
| Safe Load Limit               | 2.5X  |         |       | Rated     |           |
| Operating Temperature         | -40   |         | +85   | °C        |           |
| Storage Temperature           | -40   |         | +85   | °C        |           |
| Compensated Temperature       | 0     |         | 50    | °C        |           |
| Humidity                      | 0     |         | 90    | %RH       |           |
| Deflection at Rated Load      |       |         | 0.05  | mm        |           |
| Endurance                     |       | 1.0 E+6 |       | FS cycles |           |

For custom configurations, consult factory.

## Notes

1. Maximum temperature error over compensated range with respect to 25°C

## CE Compliance

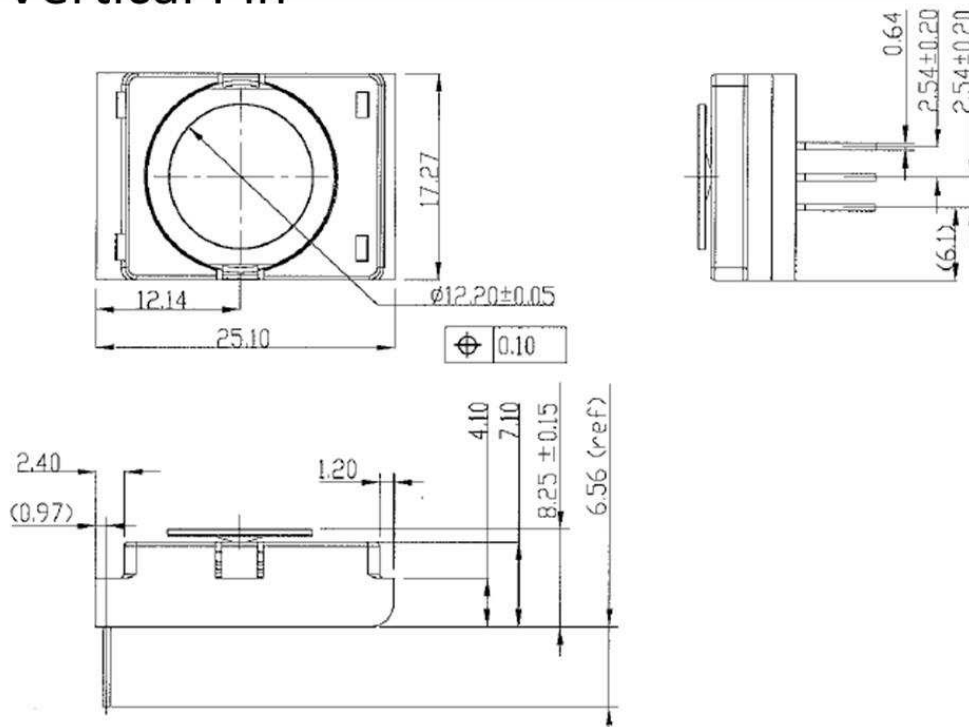
IEC61000-4-2 [4 KV/4 KV (Air/Contact)]

IEC61000-4-3 (3 V/m)

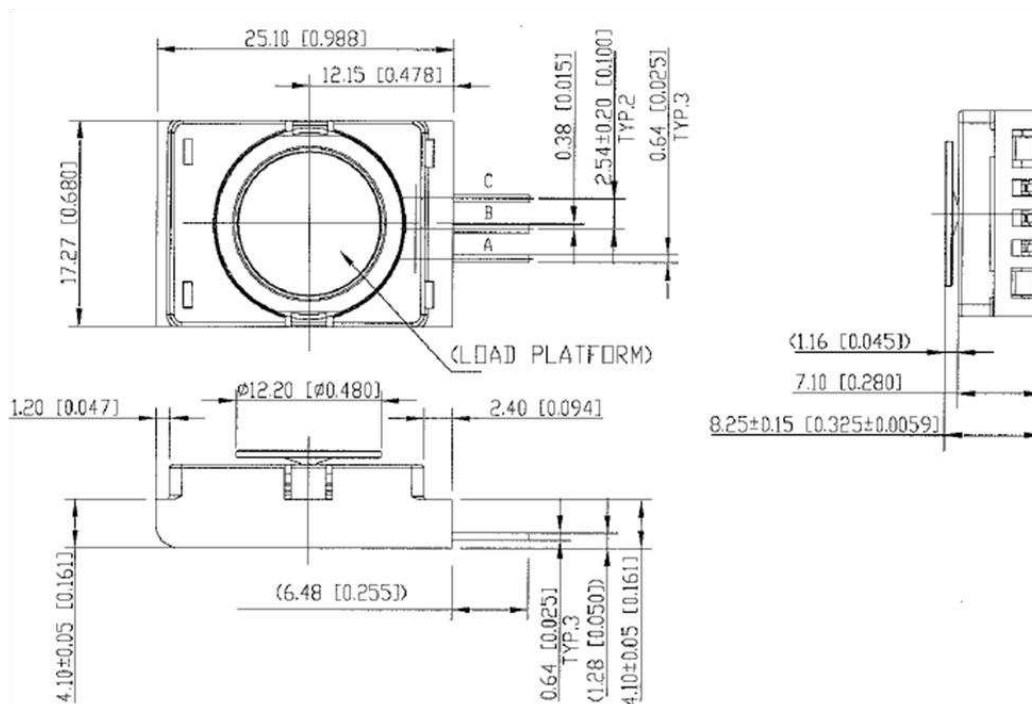
IEC55022 Class A

## DIMENSIONS

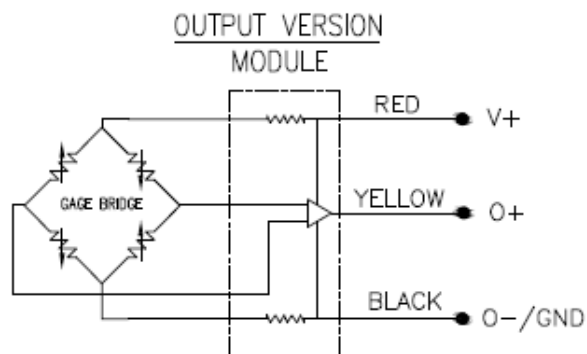
### Vertical Pin



### Horizontal Pin

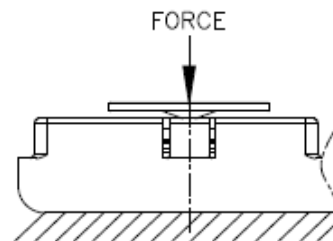


## CONNECTIONS



### PIN OUT NOTES:

A: O-/GROUND  
B: O+  
C: V+



## ORDERING INFORMATION

| FS20  | 5                            | 0              | - | 0000                                      | - | 1000                                                 | -          | G              |
|-------|------------------------------|----------------|---|-------------------------------------------|---|------------------------------------------------------|------------|----------------|
| Model | Output                       | Connection     | - | Specials                                  | - | Force Range                                          | Multiplier | Units          |
| FS20  | 3 = 0.5 – 4.5V<br>5 = 1 – 4V | 0 = Pin output | - | 0000<br>000X<br>(see below clarification) | - | 0500<br>0750<br>1000<br>1500<br>2000<br>3000<br>5000 | - = None   | G = Gram-Force |

### Clarification:

Code 0000 means that the pin configuration is horizontal

Code 000X means that the pin configuration is vertical.

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