

**NEW**

# FC21 & FC22 Compression Load Cells

## LOW COST

Compression Ranges: 2, 5, 10, 25, 50 and 100 Lbf.

High Level or Millivolt Outputs

Interchangeable

Compact Easy to Fixture Design

## DESCRIPTION

**The FC21 and FC22 Series** Low Cost Compression Force Sensors create 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-

### 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
- ◆ From 2 to 100 lb ranges

### APPLICATIONS

- ◆ Medical infusion pumps
- ◆ Robotics end-effectors
- ◆ Variable force control
- ◆ Load and compression sensing
- ◆ Exercise machines
- ◆ Pumps
- ◆ Contact sensing
- ◆ Weighing
- ◆ Household appliances

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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 very 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 up to 4V.

Microfused™ sensors are used in a variety of applications including bathroom scales, paint sprayers and safety-critical automotive brake sensors.

MSI's models FC21 and FC22 are appropriate for use in all types of OEM weighing and force measurement applications where high reliability and accuracy are critical. From appliance controls to biomechanical force feedback, the FC21 and FC22 are 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 FC21 and FC22 are fully thermally compensated for changes in zero and span with respect to temperature and offer normalized zero and span for interchangeability. Consult MSI for uncompensated super low cost variants of the FC21 and FC22 instruments.

### CE compliant per the following specifications:

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

**msisensors**  
 innovation • performance • reliability

PRELIMINARY

# FC21 & FC22 Compression Load Cells

## performance specifications

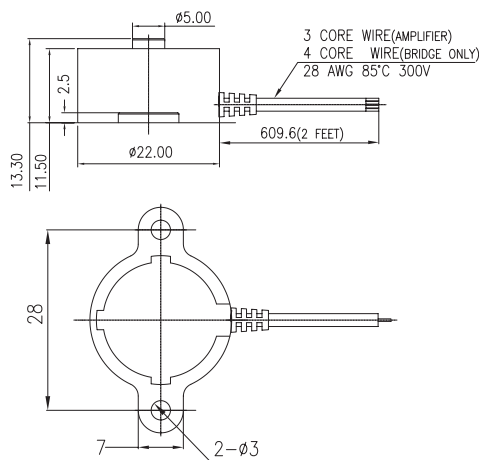
|   |                                  |
|---|----------------------------------|
| Standard Ranges: FC21                                   | 2, 5 Lbf Compression             |
| FC22  | 10, 25, 50, 100 Lbf Compression  |
| Maximum over load                                       | 250% of range                    |
| Recommended Excitation Voltage (Amplified)              | 3.3 VDC to 5 VDC (1)             |
| Recommended Excitation Voltage (Bridge Only)            | 5 VDC                            |
| Full Scale Output Span (FSO) (Amplified/Ratiometric)    | 0.5 to 4.5 V at 5 VDC excitation |
| Full Scale Output Span (Bridge Only)                    | 10 mV/V +/-5%                    |
| Output at No Load (Zero output)                         | +/-5% FSO (2)                    |
| Combined Non-linearity, Hysteresis and Nonrepeatability | < +/- 1% FSO                     |
| Long Term Stability (1 year)                            | + /- 1% Span (Typical)           |
| Temperature Compensation                                | 0 - 50° C                        |
| Thermal Zero Shift                                      | < +/- 0.05% FSO/°C               |
| Thermal Sensitivity Shift                               | < +/- 0.05%/°C                   |
| Operating and Storage Temperature Range                 | - 40° C to 85° C                 |
| Humidity  | 0 - 90% RH                       |
| Input Resistance (Bridge Only)                          | 8K ohms (nominal)                |
| Output Resistance (Bridge Only)                         | 5K ohms (nominal)                |
| Deflection at Rated Load                                | < 0.05 mm                        |
| Isolation Resistance                                    | > 50 Mohms@ 250VDC               |

1) Higher excitation voltages available on request.

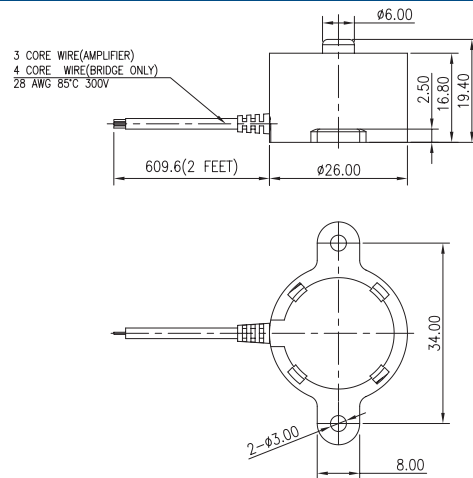
2) Lower trim values available on request.

## dimensions

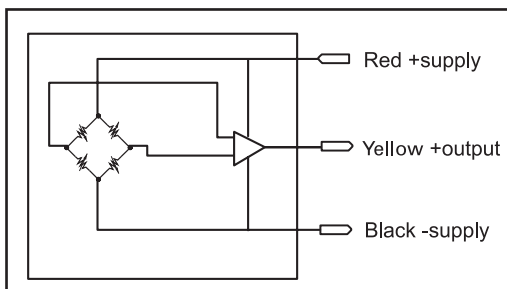
FC21



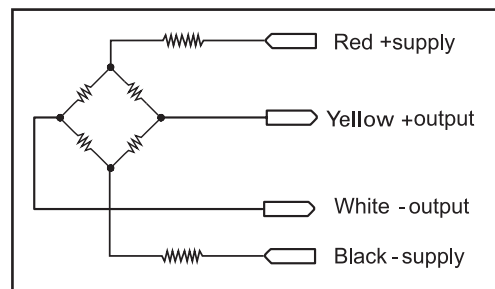
FC22



### High Level Amplified Output



### Millivolt Bridge Version



## ordering information

| Family                                       | Body | Output                         | Connection      | Specials                    | Range                     | Multiplier | Units       |
|--|------|--------------------------------|-----------------|-----------------------------|---------------------------|------------|-------------|
| Sample PN: FC                                | 21   | 3                              | 1               | 0000                        | 0005                      | -          | L           |
| FC21: Compression: Low Range                 |      | 1= 10 mV/V FSO                 | 1= Cable output | Reserved for custom designs | FC21: 2 and 5 Lbf         | none       | L = Lbf     |
| FC22: Compression: > 5 Lbf (100 Lbf maximum) |      | 3= 0.5-4.5 V FSO @ 5 VDC input |                 |                             | FC22: 10, 25, 50, 100 Lbf |            | N = Newtons |