



## FEATURES

- Small Size
- Low Noise
- Robust: High Over-Range Capability
- High Reliability
- Low Deflection
- Essentially Unlimited Cycle Life Expectancy
- Low Off Center Errors
- Fast Response Time
- 10 to 100 lbf Ranges
- Reverse Polarity Protected

## APPLICATIONS

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

## FC22

### Compression Load Cell

## SPECIFICATIONS

- 10 – 100 lbf Ranges
- High Level or mV Outputs
- Interchangeable
- Compact Easy to Fixture Design
- CE Compliance

The FC22 is a medium compression force sensor that creates new markets previously unrealizable due to cost and performance constraints. The FC22 offers normalized zero and span for interchangeability and is thermally compensated for changes in zero and span with respect to temperature.

The FC22 incorporates MEAS' 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 FC22 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.

Cost-optimization of the FC22 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 FS20 for lower force applications or the FC23 for higher force applications.

## STANDARD RANGES

| Range     | lbf |
|-----------|-----|
| 0 to 0010 | •   |
| 0 to 0025 | •   |
| 0 to 0050 | •   |
| 0 to 0100 | •   |

## PERFORMANCE SPECIFICATIONS

Supply Voltage: 5.0V, Ambient Temperature: 25°C (unless otherwise specified)

| PARAMETERS                                              | MIN   | TYP   | MAX  | UNITS           | NOTES |
|---------------------------------------------------------|-------|-------|------|-----------------|-------|
| Span (Unamplified, FC2201)                              | 24    | 30    | 36   | mV/V            | 1     |
| Span (Unamplified, FC2211)                              | 19    | 20    | 21   | mV/V            | 1     |
| Span (Amplified)                                        | 3.8   | 4.00  | 4.2  | V               | 1     |
| Zero Force Output (Unamplified, FC2201)                 | -1    | 0     | 1    | mV/V            | 1     |
| Zero Force Output (Unamplified, FC2211)                 | -0.5  | 0     | 0.5  | mV/V            | 1     |
| Zero Force Output (Amplified)                           | 0.45  | 0.5   | 0.55 | V               | 1     |
| Accuracy (non-linearity, hysteresis, and repeatability) |       | ±1    |      | %Span           | 2     |
| Output Resistance (Unamplified)                         |       | 2.2   |      | kΩ              |       |
| Input Resistance (Unamplified)                          |       | 3     |      | kΩ              |       |
| Temperature Error – Zero                                | -1.25 |       | 1.25 | %Span           | 3     |
| Temperature Error – Span                                | -1.25 |       | 1.25 | %Span           | 3     |
| Long Term Stability (1 year)                            |       | ±1    |      | %Span           |       |
| Maximum Overload                                        | 2.5X  |       |      | Rated           |       |
| Compensated Temperature                                 | 0     |       | 50   | °C              |       |
| Operating Temperature                                   | -40   |       | +85  | °C              |       |
| Storage Temperature                                     | -40   |       | +85  | °C              |       |
| Excitation Voltage (Unamplified)                        |       |       | 5    | V <sub>DC</sub> |       |
| Excitation Voltage (Amplified)                          | 4.75  | 5     | 5.25 | V <sub>DC</sub> |       |
| Isolation Resistance (250V <sub>dc</sub> )              | 50    |       |      | MΩ              |       |
| Deflection at Rated Load                                |       |       | 0.05 | mm              |       |
| Humidity                                                | 0     |       | 90   | %RH             |       |
| Weight                                                  |       | 18.41 |      | grams           |       |

For custom configurations, consult factory

### Notes

1. Ratiometric to supply.
2. Best fit straight line.
3. Maximum temperature error over compensated range with respect to 25°C.

## CE Compliance

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

IEC61000-4-3 (3 V/m)

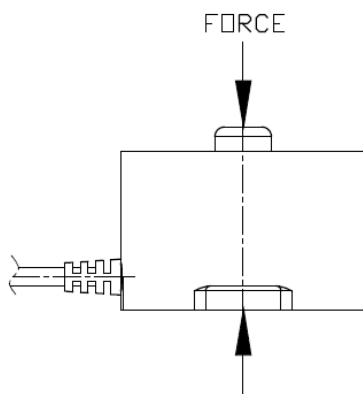
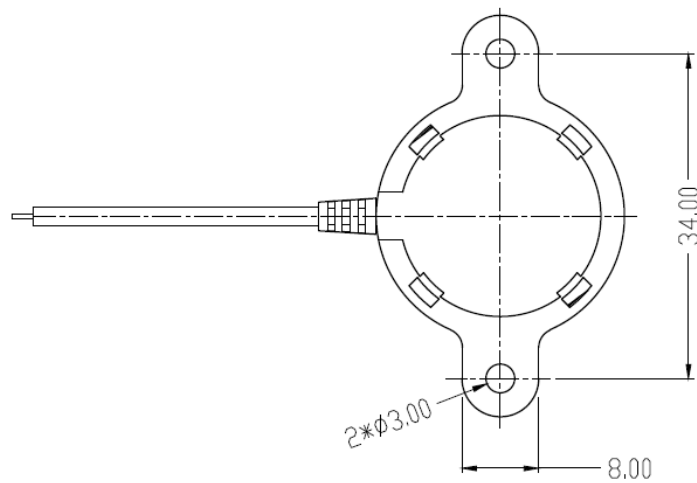
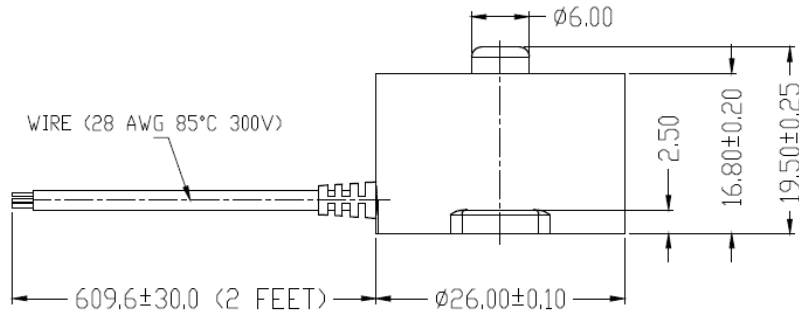
IEC55022 Class A

## DIMENSIONS

FC2201:

FC2211:

FC2231:



WIRE NOTE:

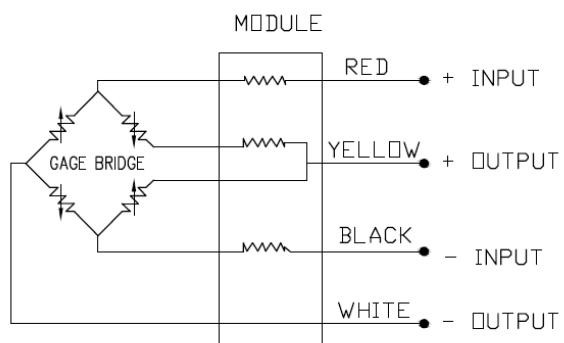
| P/N              | WIRE CONNECTIONS               |
|------------------|--------------------------------|
| FC2201<br>FC2211 | 4 CORE WIRE (28 AWG 85°C 300V) |
|                  | 1: YELLOW: +OUTPUT             |
|                  | 2: WHITE: -OUTPUT              |
|                  | 3: RED: +INPUT                 |
| FC2231           | 4: BLACK: -INPUT               |
|                  | 3 CORE WIRE (28 AWG 85°C 300V) |
|                  | 1: YELLOW: +OUTPUT             |
|                  | 2: RED: +INPUT                 |
|                  | 3: BLACK: COMMON               |

## CONNECTIONS

FC2201:

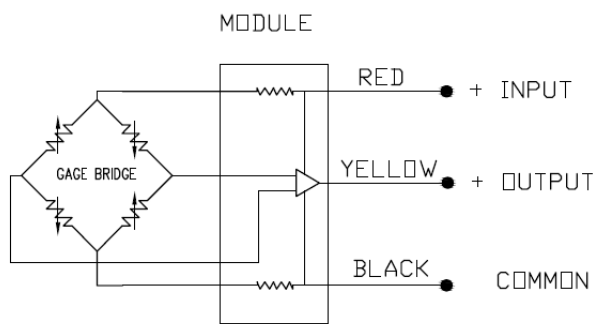
FC2211:

MILLIVOLT OUTPUT VERSION



FC2231:

AMPLIFIED OUTPUT VERSION



## ORDERING INFORMATION

FC22 – 3 1 0000 0100 – L

| Output |             |
|--------|-------------|
| Code   | Output      |
| 0      | 0 – 150 mV  |
| 1      | 0 – 100 mV  |
| 3      | 0.5 – 4.5 V |

| Connection |              |
|------------|--------------|
| 1          | 2 feet Cable |

| Vent |     |
|------|-----|
| L    | lbf |

| Multiplier |      |
|------------|------|
| -          | None |

| Force Range |  |
|-------------|--|
| 0010        |  |
| 0025        |  |
| 0050        |  |
| 0100        |  |

### NORTH AMERICA

Measurement Specialties, Inc.,  
a TE Connectivity Company  
Tel: 1-800-522-6752  
Email : [customercare.lcsb@te.com](mailto:customercare.lcsb@te.com)

### EUROPE

MEAS France SAS,  
a TE Connectivity company  
Tel: +31 73 624 6999  
Email : [customercare.lcsb@te.com](mailto:customercare.lcsb@te.com)

### ASIA

Measurement Specialties (China), Ltd.,  
a TE Connectivity Company  
Tel: +86 400-820-6015  
Email: [customercare.shzn@te.com](mailto:customercare.shzn@te.com)

### TE.com/sensorsolutions

Measurement Specialties, Inc., a TE Connectivity company.

Measurement Specialties, TE Connectivity, TE Connectivity (logo) and EVERY CONNECTION COUNTS are trademarks. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2015 TE Connectivity Ltd. family of companies All Rights Reserved.