



## FX29 COMPRESSION LOAD CELL

Versatile Miniature Force Sensor  
mV, Amplified, and Digital Outputs  
Low Power Consumption  
Rugged Microfused Sensing Element  
Stainless Steel Enclosure  
Several Load Ranges

### FEATURES

- Compact Design
- mV or Amplified Analog Outputs
- Optional I<sup>2</sup>C Digital Interface
- High Over Range Capability

### APPLICATIONS

- Medical Infusion Pumps
- Analog & Digital Scales
- Fitness & Exercise Equipment
- Payload Weighing
- Power Tools
- Robotics
- Surgical & Dental Tools
- Battery Powered Devices
- Manufacturing Equipment

TE Connectivity's (TE) FX29 is a compact compression load cell that offers exceptional price-to-performance in a robust sensor package. Optimized for embedded force sensing applications from disposable medical devices to durable appliances and exercise equipment. The FX29 allows design flexibility with mV, amplified, and digital output options.

The FX29 incorporates the high reliability Microfused technology and is offered in ranges from 10lbf to 100lbf (50N to 500N). Microfused technology provides excellent span and zero stability, outstanding cycle life, superior resolution, high over-range capabilities, and an unamplified span sensitivity of 20mV/V.

The FX29 utilizes a two-piece construction of stainless steel materials. The combination of a metal injection molded flexure and micro miniaturized MEMS strain gauges allows flexibility of force range options for a lower cost sensor. These improvements over previous load cell designs give the FX29 more precise dimensional control and better performance.

**Absolute Maximum Ratings (Analog)<sup>(1)</sup>**

| Parameter           | Symbol           | Min  | Typ | Max  | Units | Notes/Conditions       |
|---------------------|------------------|------|-----|------|-------|------------------------|
| Supply voltage      | V <sub>dd</sub>  |      |     | 6.0  | V     | Analog mV Output       |
|                     |                  |      |     | 5.25 | V     | Analog 0.5-4.5V Output |
| Storage temperature | T <sub>S</sub>   | -40  |     | +85  | °C    |                        |
| Compressive load    | L <sub>max</sub> |      |     | 2.5X | Rated |                        |
| ESD                 |                  | -4.0 |     | 4.0  | kV    | Human Body Model       |

<sup>(1)</sup> Maximum limits the device will withstand without damage

**Standard Load Ranges**

| Pounds-Force (lbf) | Newtons (N) |
|--------------------|-------------|
| 10                 | 50          |
| 25                 | 125         |
| 50                 | 250         |
| 100                | 500         |

**Electrical Specifications (Analog)**

(Unless otherwise specified, all parameters are measured at 25°C @ 5.0V applied)

| Parameter                             | Symbol           | Min  | Typ | Max  | Units   | Notes/Conditions     |
|---------------------------------------|------------------|------|-----|------|---------|----------------------|
| Supply voltage (V <sub>supply</sub> ) | V <sub>dd</sub>  | 1.00 |     | 6.0  | V       | mV Output only       |
|                                       |                  | 4.75 |     | 5.25 | V       | 0.5-4.5V Output only |
| Operating current                     | I <sub>dd</sub>  |      |     | 3    | mA      | 0.5-4.5V Output only |
| Input resistance                      | R <sub>in</sub>  | 2.4  | 3.0 | 3.6  | kΩ      | mV Output only       |
| Output resistance                     | R <sub>out</sub> | 1.76 | 2.2 | 2.64 | kΩ      | mV Output only       |
| Rise time                             | T <sub>r</sub>   |      |     | 2.0  | ms      | 10% to 90%           |
| Maximum output current                | I <sub>o</sub>   | 2.2  |     |      | mA      | 0.5-4.5V Output only |
| Output short circuit duration         | T <sub>s</sub>   |      |     | ∞    | seconds | 0.5-4.5V Output only |
| Insulation resistance                 |                  | 50   |     |      | MΩ      | @250VDC              |
| Bandwidth                             |                  |      |     | 1.0  | kHz     |                      |