

## ALF250 | ALF251

### Miniature diaphragm load cell

- Measurement ranges 0 ... 100 N to 0 ... 3.2 kN
- Tension / compression
- Non-linearity 0.5 % RL
- Output signal 1.6 mV/V or rationalised 1.0 mV/V  $\pm 0.5$  %
- Supply voltage 5 VDC, max. 10 VDC (ALF250), 10 VDC (ALF251)



The ALF250 and ALF251 series are ideally suited to force measurements in confined spaces in both tension and compression for control of critical parameters in all kinds of industrial processes. Their versatility is such that they are also applied in a great number of important fields of scientific and engineering test work, mobile as well as workshop, static and dynamic.

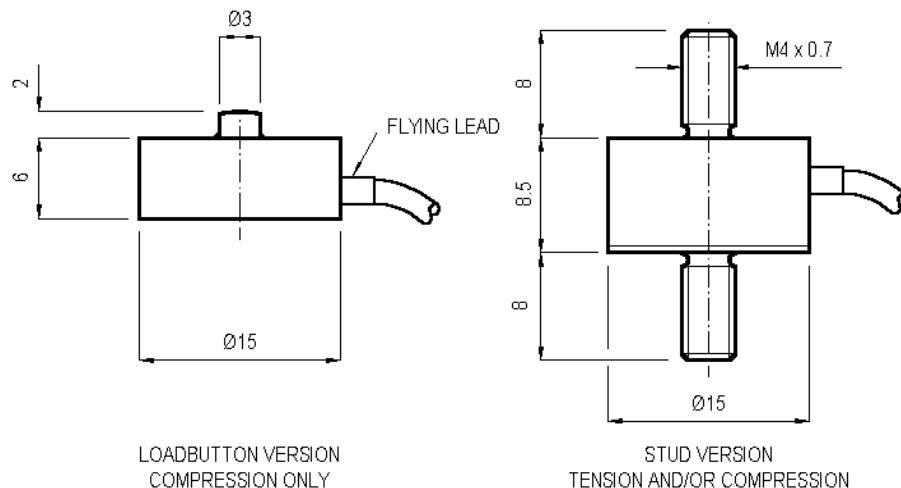
#### Geometry:

Very small loadbutton cell for force measurement in confined spaces. Used in compression and/or tension on a wide range of OEM or end-user applications.

With bi-directional versions there is a small difference between the output signal for compression and tension. All standard bi-directional load cells are calibrated in both modes and the output for each direction is stated on the test / calibration certificate.

#### ■ Dimensions

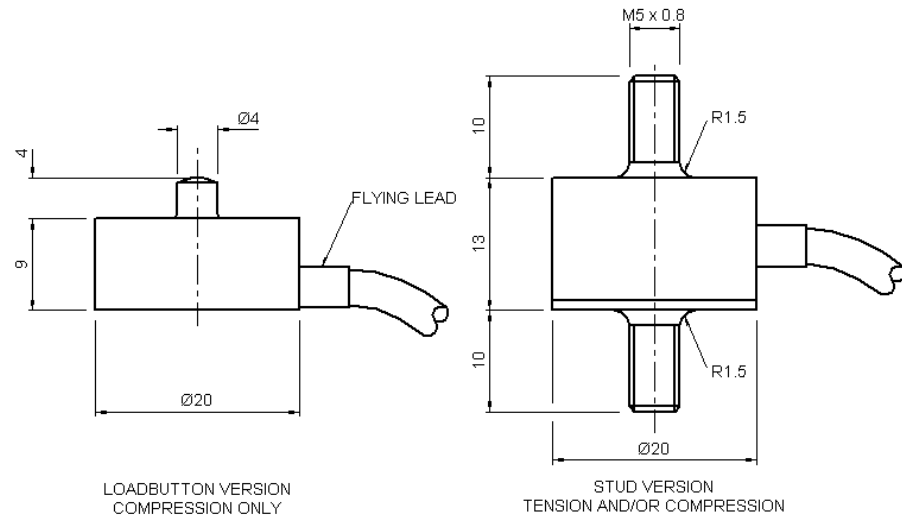
##### Series ALF250:



Dimensions in „mm“, approx. values

These drawings are for information only and not intended for construction purpose. Please contact us for detailed drawings.

## Series ALF251:



Dimensions in „mm“, approx. values

These drawings are for information only and not intended for construction purpose.  
Please contact us for detailed drawings.

### ■ Specification

|   | Series ALF250           | Series ALF251                                   |                              |
|---|-------------------------|---|------------------------------|
| Rated load:                               | 100 / 200 / 400 / 800 N | 100 N / 200 N / 400 N / 800 N / 1.6 kN / 3.2 kN |                              |
| Non-linearity, terminal:                  | ±0.5 % RL               | ±0.5 % RL                                       |                              |
| Hysteresis:                               | ±0.5 % RL               | ±0.5 % RL                                       |                              |
| Creep, 20 min:                            | ±0.1 % AL               | ±0.1 % AL                                       |                              |
| Repeatability:                            | ±0.1 % RL               | ±0.1 % RL                                       |                              |
| Rated output, nominal:                    | 1.6 mV/V                | 1.6 mV/V  |                              |
| Rated output, rationalised:               | 1.0 mV/V ±0.5 % RL      | 1.0 mV/V ±0.5 % RL                              |                              |
| Zero load output:                         | ±4 % RL                 | ±4 % RL   |                              |
| Temperature effect on rated output:       | ±0.005 % AL/K           | ±0.005 % AL/K                                   |                              |
| Temperature effect on zero load output:   | ±0.03 % RL/K            | ±0.03 % RL/K                                    |                              |
| Compensated temperature range:            | -10 ... +50 °C          | -10 ... +50 °C                                  |                              |
| Operating temperature range:              | -10 ... +80 °C          | -10 ... +80 °C                                  |                              |
| Supply voltage, recommended:              | 5 V                     | 10 V  |                              |
| Supply voltage, max.:                     | 10 V                    | 10 V  |                              |
| Bridge resistance:                        | 350 Ω                   | 350 Ω   |                              |
| Insulation resistance, minimum at 50 VDC: | 500 MΩ                  | 500 MΩ  |                              |
| Overload, safe:                           | 150 % RL                | 150 % RL  |                              |
| Overload, ultimate:                       | 200 % RL                | 200 % RL  |                              |
| Environmental sealing:                    | IP65                    | IP65  |                              |
| Weight (excl. cable):                     | approx. 8 g to 12 g     | approx. 8 g to 11 g                             |                              |
| Material:                                 | stainless steel         | ranges up to 200 N:<br>other ranges:            | aluminium<br>stainless steel |

#### Notes:

1. RL = rated load
2. AL = applied load
3. Temperature coefficients apply over the compensated range.
4. The load must be applied directly through the central loading axis.
5. When this load cell is rationalised the resistors are housed in a capsule located in the load cell cable 100 mm from the free end.  
Capsule dimensions are Ø10 mm by 57 mm.

| Rated load | Structural stiffness, nom. |                       | Rated load | Structural stiffness, nom. |                       | Rated load | Structural stiffness, nom. |                       |
|------------|----------------------------|-----------------------|------------|----------------------------|-----------------------|------------|----------------------------|-----------------------|
|            | ALF250                     | ALF251                |            | ALF250                     | ALF251                |            | ALF250                     | ALF251                |
| 100 N      | $6.2 \times 10^6$ N/m      | $3.7 \times 10^6$ N/m | 400 N      | $2.5 \times 10^7$ N/m      | $1.5 \times 10^7$ N/m | 1600 N     | ---                        | $6.0 \times 10^7$ N/m |
| 200 N      | $1.2 \times 10^7$ N/m      | $7.3 \times 10^6$ N/m | 800 N      | $5.0 \times 10^7$ N/m      | $3.0 \times 10^7$ N/m | 3200 N     | ---                        | $1.2 \times 10^8$ N/m |

## ■ Electrical Connections

The loadcell is fitted with 2 metres of PVC insulated 4 core screened cable type 7-1-4C.

### Wiring:

|        |                  |
|--------|------------------|
| red    | + supply voltage |
| blue   | - supply voltage |
| yellow | + output signal  |
| green  | - output signal  |
| orange | screen           |

Reverse the signal connections to obtain a positive signal in tension mode.

The screen is not connected to the load cell body.

## ■ Ordering Information

|  |                                   |  |   |
|--|-----------------------------------|--|---|
| <b>ALF250CFR0H0</b><br><b>ALF251CFR0H0</b> | compression, IP65, loadbutton     | <b>ALF250CFR0HN</b><br><b>ALF251CFR0HN</b> | compression, IP65, rationalised, loadbutton     |
| <b>ALF250DFR0H0</b><br><b>ALF251DFR0H0</b> | compression, IP65, thread fitting | <b>ALF250DFR0HN</b><br><b>ALF251DFR0HN</b> | compression, IP65, rationalised, thread fitting |
| <b>ALF250TFR0H0</b><br><b>ALF251TFR0H0</b> | tension, IP65                     | <b>ALF250TFR0HN</b><br><b>ALF251TFR0HN</b> | tension, IP65, rationalised                     |
| <b>ALF250UFR0H0</b><br><b>ALF251UFR0H0</b> | bi-directional, IP65              | <b>ALF250UFR0HN</b><br><b>ALF251UFR0HN</b> | bi-directional, IP65, rationalised              |

Please add range in the required units.

### Safety note:

When using the load cell in tension mode it is essential to provide additional safety precautions like safety chains etc. for catching the load in a breakage, which cannot be excluded completely.

Due to continual product development, ALTHEN and partners reserve the right to vary the foregoing details without prior notice.