

F300 Sideload Rejection Loadcell

Standard Ranges 1, 2, 5, 10, 20, 50, 100, 200 and 400kN (100kgf to 40tonnef)

- ✓ High performance
- ✓ Misalignment error compensation
- ✓ Excellent Sideload rejection < 1%RL error for 20%RL transverse loads and much less for vectors
- ✓ Formulaic error quantification
- ✓ Traceable calibration with certificate included in the standard price
- ✓ Standard 1 year warranty



Specification

| Parameter | Value | Unit |
|--|--------|------------|
| Non-linearity - Terminal | ±0.03 | % RL |
| Hysteresis | ±0.03 | % RL |
| Creep - 20 minutes | ±0.05 | % AL |
| Repeatability | ±0.02 | % RL |
| Rated output - Nominal | 1.2 | mV/V |
| Rated output - Rationalised | 1.0 | mV/V |
| Rationalisation tolerance (applies to single direction calibrations) | ±0.1 | % RL |
| Output symmetry | ±0.2 | %AO |
| Fatigue life | 108 | ±RL cycles |
| Zero load output | ±4 | % RL |
| Temperature effect on rated output per Å°C | ±0.005 | % AL |
| Temperature effect on zero load output per Å°C | ±0.01 | % RL |

| | | |
|--|-----------------------------|------|
| Temperature range - Compensated | -10 to +50 | °C |
| Temperature range - Safe | -10 to +80 | °C |
| Excitation voltage - Recommended | 10 | V |
| Excitation voltage - Maximum | 20 | V |
| Bridge resistance | 700 | Ω |
| Insulation resistance - Minimum at 50Vdc | 500 | MΩ |
| Overload - Safe | 100 | % RL |
| Overload - Ultimate | 200 | % RL |
| Maximum permissible sideload | 60 | % RL |
| Maximum permissible moment | See reference chart in E036 | |
| Sealing | IP65 | |
| Weight - Nominal (excluding cable) | See outline drawing | |

Benefiting from advanced machining techniques, the F300's complex beam structure offers reliable error compensation in a cylindrical, 'donut' style footprint.

Whereas the long established 'donut' products such as the F202 require near perfect loading conditions, the F300's unique strain system compensates for typical axial misalignment as well as the combination of large sideloads and small moments. This has been used to good effect in 'Junkers' test machines, subjected to an extreme, rapid cycling of large sideloads, for bolt tension and 'self-loosening' fastener tests. Further details of this application, along with simple error equations for the F300 loadcell can be found in Engineering Sheet E036. The circular patterns of fixing holes are deliberately over engineered to withstand potentially large moment effects and allow tension, compression and bi-directional versions as standard. There is also the added potential for customer supplied adaptor plates to give versatile end fixing options. Note that care should be taken to ensure the correct lengths of screws are used and that these are torqued correctly as given in Engineering Sheet E036. We are happy to design variants of this loadcell to meet your specific requirements. Ranges above 5kN can be manufactured for fully compensated operation up to +250°C. Please consult our engineering department for further information.

Order Codes

| Code | Description |
|------------|--------------------------------|
| F300CFR0K0 | Compression, unrationalised |
| F300TFR0K0 | Tension, unrationalised |
| F300UFROK0 | Bi-directional, unrationalised |
| F300CFR0KN | Compression, rationalised |
| F300TFR0KN | Tension, rationalised |
| F300UFR0KN | Bi-directional, rationalised |

Structural Stiffness - Nominal

| Range (kN) | Stiffness (N/m) |
|------------|------------------------|
| 1 | 2.0 x 10 ⁷ |
| 2 | 5.7 x 10 ⁷ |
| 5 | 2.2 x 10 ⁸ |
| 10 | 2.2 x 10 ⁸ |
| 20 | 6.1 x 10 ⁸ |
| 50 | 2.5 x 10 ⁹ |
| 100 | 2.2 x 10 ⁹ |
| 200 | 6.5 x 10 ⁹ |
| 400 | 2.4 x 10 ¹⁰ |

Notes

- AL = Applied load.
- RL = Rated load.
- Temperature coefficients apply over the compensated range.
- AO=Average of tension and compression outputs for full load.

Connections

For ranges up to 50kN the loadcell is fitted with 2 metres of PVC insulated 4 core screened

cable type 7-2-4C. Ranges above 50kN are fitted with 16-2-4C cable.

Excitation + = Red, Excitation - = Blue, Signal + = Yellow, Signal - = Green, Screen = Orange.

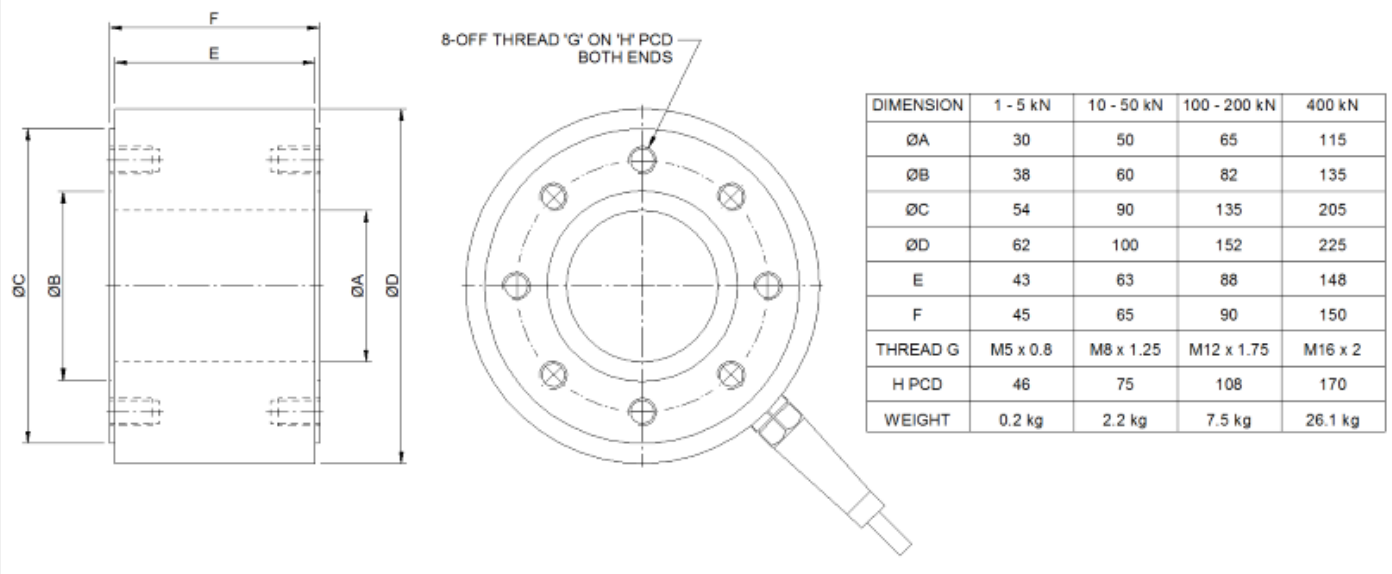
Reverse the signal connections to obtain a positive signal in tension mode. The screen is not connected to the loadcell body.

For rationalised ranges up to 5kN the resistors are housed in a capsule located in the loadcell cable 100mm from the free end. Capsule dimensions are Ø10mm by 57mm.

Files

| Type | Title | Download |
|-----------|---|--------------------------|
| STEP File | F300-T/C/U-FR0KN 1 to 5kN (100 to 500kgf) | Download |
| STEP File | F300-T/C/U-FR0KN 10 to 50kN (1 to 5tonnef) | Download |
| STEP File | F300-T/C/U-FR0KN 100 to 200kN (10 to 20tonnef) | Download |
| STEP File | F300-T/C/U-FR0KN 400kN (40tonnef) | Download |

Outline



Novatech Measurements Limited

83 Castleham Road, St Leonards on Sea, East Sussex, TN38 9NT, England.

Telephone: +44 (0)1424 852744

Fax: +44 (0)1424 853002

E-mail: info@novatechloadcells.co.uk