XFTC310 Miniature Load Cell

- **0-2N to 0-2kN [0.4 Lbf to 400 Lbf]**
- **Tension and/or Compression**
- **High Stiffness**
- **For Static and Dynamic Applications**
- **Threaded Male/Female Mechanical Fitting**
- **High Level Output Model with Integrated Amplifier**
- **High Overload Capacity**

DESCRIPTION

The XFTC310 series has been specifically developed to measure tension and/or compression in static and dynamic applications. The miniature size and light weight facilitate testing where these conditions are necessary. The sensing element is fitted with a fully temperature compensated Wheatstone bridge equipped with high stability micro-machined silicon strain gages. The use of silicon strain gages optimises the load cell's performance at low ranges and frequencies. For sensors with a range of between 500 N and 2 kN [100 and 400 Lbf], a high-level output model is available. With two threaded male/female studs, the XFTC310 is easily installed in industrial or OEM applications. A strain relief spring strengthens the cable output.

With many years of experience as a designer and manufacturer of sensors, Measurement-Specialties Inc, often works with customers to design or customize sensors for specific uses and testing environments.

To meet your needs we also offer complete turnkey systems. The matched components (sensor, power, amplifier and digital display) are formatted, calibrated and ready for immediate use.

FEATURES

- Small design easy to mount
- Tension and/or Compression
- Optional IP rating improvement
- Extended temperature range available
- Other male/female threads available

APPLICATIONS

- Strain measurement on finger-like command
- Connector and cable traction tests
- Miniature press-fit device
- Robotics regulation
- Small size actuators

STANDARD RANGES

F.S. Ranges in N	2 - 5 - 10 - 20 - 50	100 to 200	500 to 1k	2k
F.S. Ranges in Lbf	0.4 - 1 - 2 - 4 - 10	20 to 40	100 to 200	400
Stiffness in N/m	$3.8x10^5$ to $4.7x10^7$	$7.9x10^7$ to $2.2x10^8$	$3.4x10^8$ to $9.6x10^8$	$2.7x10^9$
Stiffness in Lbf/ft	$2.4x10^4$ to $3.2x10^5$	$5.4x10^5$ to $1.5x10^7$	$2.3x10^7$ to $6.6x10^7$	$1.9x10^8$
Materials	Aluminium	Stainless Steel		

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PERFORMANCE SPECIFICATIONS

Ambient Temperature: 20±1° C (unless otherwise specified)

PARAMETERS	
Operating Temperature Range (OTR)	-40 to 120 °C [-40 to 248 °F]
Compensated Temperature Range (CTR)	0 to 60 ° C [32 to 140°F]
Zero Shift in CTR	<2% F.S. /60 ° C [108 °F]
Sensitivity Shift in CTR	<2% of reading / 60 ° C [108 °F]
Range (F.S.)	0-2N to 0-2kN [0-0.4 Lbf to 0-400 Lbf]
Over-Range	
Without Damage	2 to 4 x F.S.
Without Destruction	3 to 6 x F.S.
Accuracy	
Linearity	≤±0.5%F.S.
Hysteresis	≤±0.5%F.S.

Electrical Characteristics

Model	XFTC310	XFTC310-A1	XFTC310-A2
Supply Outage	10Vdc	10 – 30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output	100mV	2V ±5% F.S.	±5V ±5% F.S.
Zero Offset	<±10mV	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	1000 to 3000Ω	<30mA	30mA
Output Impedance	500 to 1000Ω	<10Ω	<10Ω
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

Notes

1. Shielded cable with 4 Teflon wires (AWG36/28), standard length 2 m [6.5 ft] with strain relief spring
2. Material: Body in stainless steel or aluminum alloy depending on F.S., ; Two male threads M5 or [10-32 UNF], M10 or [3/8-24 UNF] depending on F.S. (metric thread is standard)
3. Protection Index: IP50 (other levels available on request)
4. A1 and A2 options are only available for ranges 500N, 1kN and 2 kN

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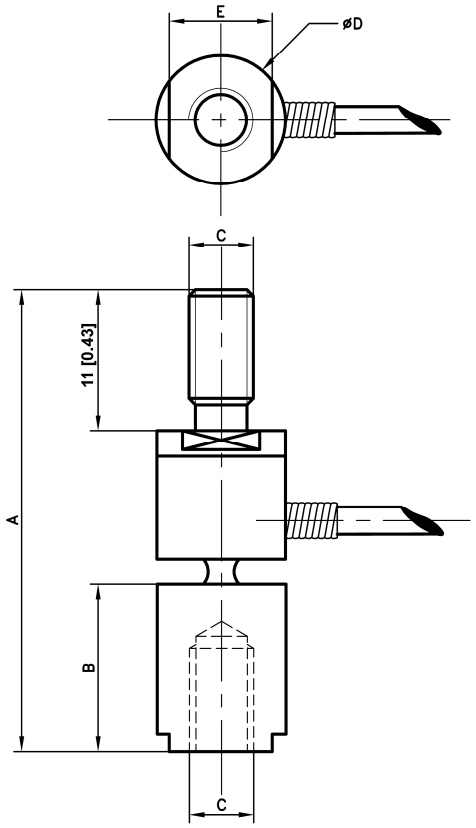
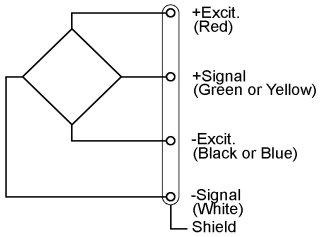
DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)



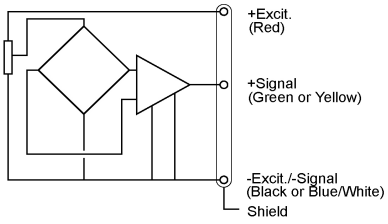
Separate data sheets are available for load cells with two male threads reference XFTC300 and two female threads reference XFTC320.
Other threads possible on request.

Wiring Schematic

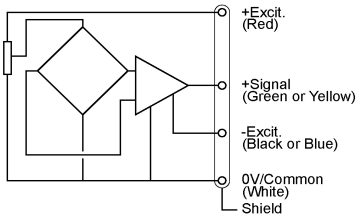
XFTC310



XFTC310-A1



XFTC310-A2



Dimensions in mm [inch]

Full Scale Range in N [Lbf]	2 - 5 - 10 - 20 -50 [0.4 - 1 - 2 - 4 - 10]	100 - 200 [20 - 40]	500 - 1000 [100 - 200]	2000 [400]
A	36 [1.42]		47 [1.85]	
B	13 [0.51]		14 [0.55]	
C (Thread)	M5		M10	
Ø D	10 [0.39]		16 [0.63]	10 [0.39]
E	8 [0.31]		12 [0.47]	8 [0.31]
Material	Aluminium Alloy	Stainless Steel		
Stiffness in N/m	$3.8x10^5$ to $4.7x10^7$	$7.9x10^7$ to $2.2x10^8$	$3.4x10^8$ to $9.6x10^8$	$2.7x10^9$
Stiffness in Lbf/ft	$2.6x10^4$ to $3.2x10^6$	$5.4x10^6$ to $1.5x10^7$	$2.3x10^7$ to $6.6x10^7$	$1.9x10^8$
Over-range	x4	x3	x3	x2

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OPTIONS

A1 : Unipolar tension
A2 : Bipolar Tension
ET1 : CTR -20 to 100 º C [-4 to 212 °F]
ET2 : CTR -40 to 120 º C [-40 to 248 °F] OTR = CTR
ET3 : CTR -40 to 150 º C [-40 to 302 °F] OTR=CTR sta inless steel only and without A1 or A2 option
HA : Accuracy (CNL&H) ±0.5% F.S. (for models ≥20 Lbf)
TS : Tolerance on F.S. output ≤±2% F.S.
LC"x": Additional cable length to standard length (in m) (**Note** : "X" = Custom value)

ORDERING INFO