

# XFTC320 Miniature Load Cell



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



## DESCRIPTION

The **XFTC320** 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 400lbf], a high-level output model is available. With two female threads, the **XFTC320** 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

- Built-in amplifier in option
- Tension and/or Compression
- Sealed version available as option
- Heavy duty
- Other threads available

## APPLICATIONS

- Strain measurement on finger-like command
- Underwater robots control command
- Miniature press-fit device
- Fatigue tests benches
- Small size actuators

## STANDARD RANGES

<b>F.S. Ranges in N</b>	2 - 5 - 10 - 20 - 50	100 - 200	500 - 1k	2k
<b>F.S. Ranges in lbf</b>	0.4 - 1 - 2 - 4 - 10	20 - 40	100 - 200	400
<b>Stiffness in N/m</b>	$3.8 \times 10^5$ to $4.7 \times 10^7$	$7.9 \times 10^7$ to $2.2 \times 10^8$	$3.4 \times 10^8$ to $9.6 \times 10^8$	$2.7 \times 10^9$
<b>Stiffness in lbf/ft</b>	$2.6 \times 10^4$ to $3.2 \times 10^5$	$5.4 \times 10^5$ to $1.5 \times 10^7$	$2.3 \times 10^7$ to $6.6 \times 10^7$	$1.9 \times 10^8$
<b>Materials</b>	Aluminum	Stainless Steel		

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## PERFORMANCE SPECIFICATIONS

All values are typical at temperature 20±1° C

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. / 50° C [/100° F]
Sensitivity Shift in CTR	<2% of reading / 50° C [/100° 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

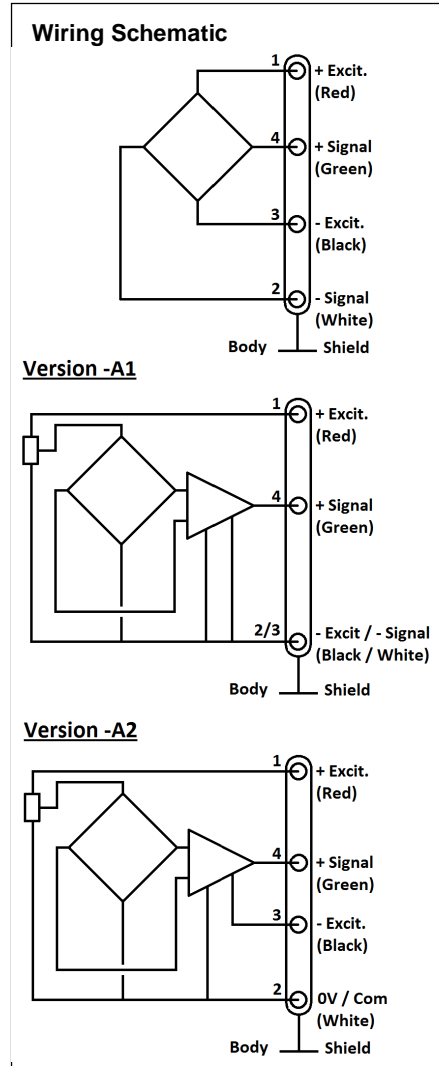
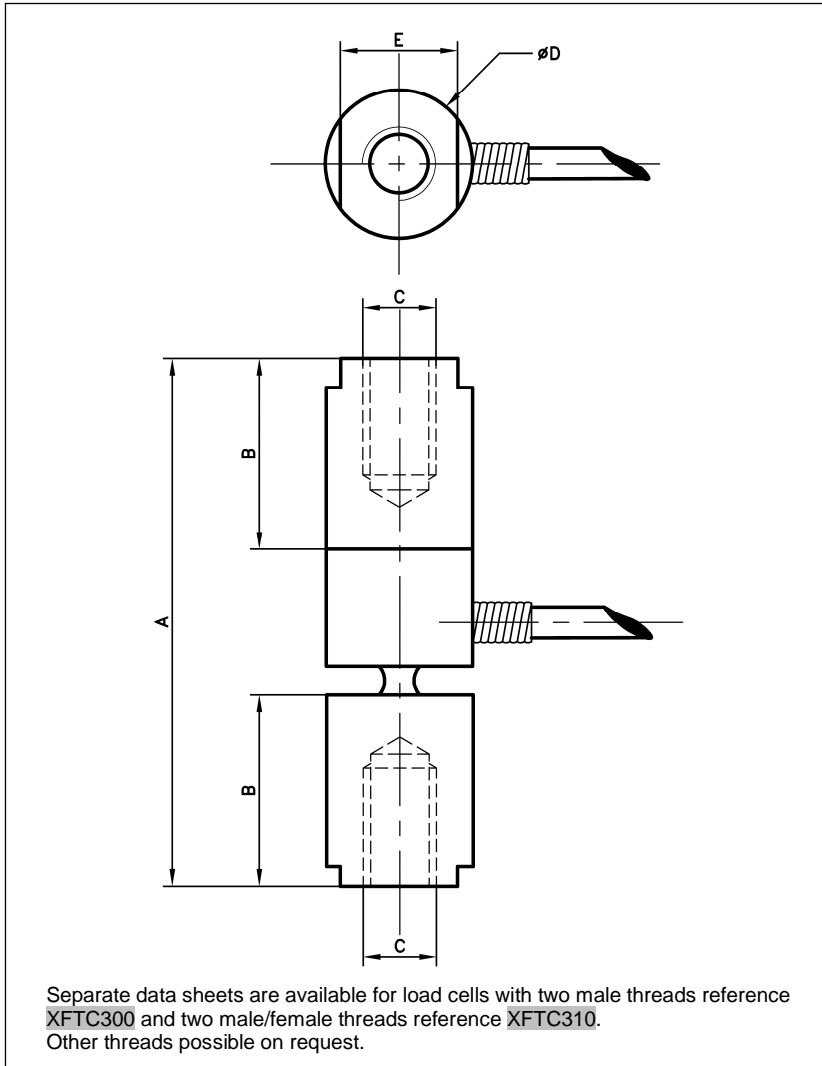
Model	XFTC320	XFTC320-A1	XFTC320-A2
Supply Voltage	10Vdc	10 – 30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output <sup>45</sup>	±100mV	±2V ±5% F.S.	±5V ±5% F.S.
Zero Offset <sup>45</sup>	<±10mV	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	1000 to 3000Ω	<30mA	30mA
Output Impedance	500 to 1000Ω	<1 kΩ <sup>6</sup>	<1 kΩ <sup>6</sup>
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

### Notes

1. Shielded cable with 4 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.
3. Protection Index: IP50 (other levels available on request)
4. A1 and A2 options are only available for ranges 500N, 1kN and 2 kN
5. Standard output signal, custom outputs available on request
6. Output impedance standard, available <100Ω on request.
7. CE conformance according to EN 61010-1, EN 50081-1, EN 50082-1

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## DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)



### Dimensions in mm [inch]

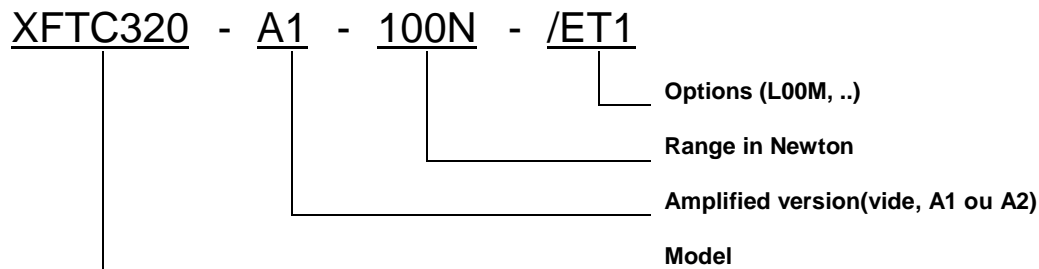
Full Scale Range in N [in lbf]	2 - 5 - 10 - 20 - 50 [0.4 - 1 - 2 - 4 - 10]	100 - 200 [20 - 40]	500 - 1000 [100 - 200]	2000 [400]
A	36 [1.42]		46 [1.81]	
B	13 [0.51]		14 [0.55]	
C Thread	M5		M10	
Internal depth	8 [0.31]		10 [0.39]	
Ø D	10 [0.39]		16 [0.63]	20 [0.79]
E	8 [0.31]		12 [0.47]	16 [0.63]
Material	Aluminum Alloy		Stainless Steel	
Stiffness in N/m	3.8x10 <sup>5</sup> to 4.7x10 <sup>7</sup>	7.9x10 <sup>7</sup> to 2.2x10 <sup>8</sup>	3.4x10 <sup>8</sup> to 9.6x10 <sup>8</sup>	2.7x10 <sup>9</sup>
Stiffness in lbf/ft	2.6x10 <sup>4</sup> to 3.2x10 <sup>5</sup>	5.4x10 <sup>5</sup> to 1.5x10 <sup>7</sup>	2.3x10 <sup>7</sup> to 6.6x10 <sup>7</sup>	1.9x10 <sup>8</sup>
Over-range	x4	x3	x3	x2

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## OPTIONS

<b>A1</b>	: Tension output with unipolar power supply (only available for ranges 500N, 1kN and 2kN)
<b>A2</b>	: Tension output with bipolar power supply (only available for ranges 500N, 1kN and 2kN)
<b>ET1</b>	: CTR -20 to 100° C [-4 to 212° F]
<b>ET2</b>	: CTR -40 to 120° C [-40 to 248° F]
<b>HA</b>	: Accuracy (CNL&H) ±0.5% F.S. (for models ≥100N; 20lbf)
<b>TS</b>	: Tolerance on F.S. output ≤±2% F.S.
<b>L00M</b>	: special cable length, replace "00" with total length in meters

## ORDERING INFO



### NORTH AMERICA

Measurement Specialties, Inc.  
Vibration Design Center  
32 Journey - Suite 150  
Aliso Viejo, CA 92656  
United States USA  
Tel: 1-949-716-0877  
Fax: 1-949-916-5677  
[t&m@meas-spec.com](mailto:t&m@meas-spec.com)

### EUROPE

Measurement Specialties  
(Europe), Ltd.  
26 Rue des Dames  
78340 Les Clayes-Sous-Bois,  
France  
Tel: +33 (0) 130 79 33 00  
Fax: +33 (0) 134 81 03 59  
[cs.lcsb@meas-spec.com](mailto:cs.lcsb@meas-spec.com)

### ASIA

Measurement Specialties  
(China), Ltd.  
No. 26 Langshan Road  
Shenzhen High-Tech Park (North)  
Nanshan District, Shenzhen  
518057  
China  
Tel: +86 755 3330 5088  
Fax: +86 755 3330 5099  
[pfg.cs.asia@meas-spec.com](mailto:pfg.cs.asia@meas-spec.com)

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