

# Model 159A Miniature Force Transducers

## Description

The 159A miniature force transducer is developed for force measurements which require a compact design.

This model employs single-bending-beam working principle, so it needs to be installed as reverse beam in order to function properly.

Based on BCM advanced strain gauge technology, the 159A provides excellent stability and reliability.

This force transducer can be made from either beryllium copper or stainless steel to realize wide range from 1.2 N to 500N.



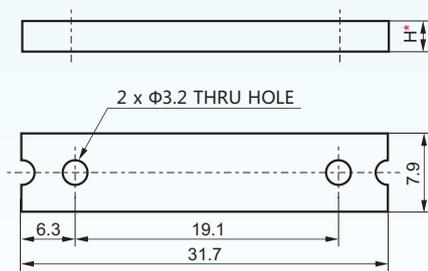
## Features

- single bending beam working principle
- reverse beam installation
- compact design
- stainless steel construction
- range from 1.2N to 500N
- accuracy up to 0.1%fs

## Applications

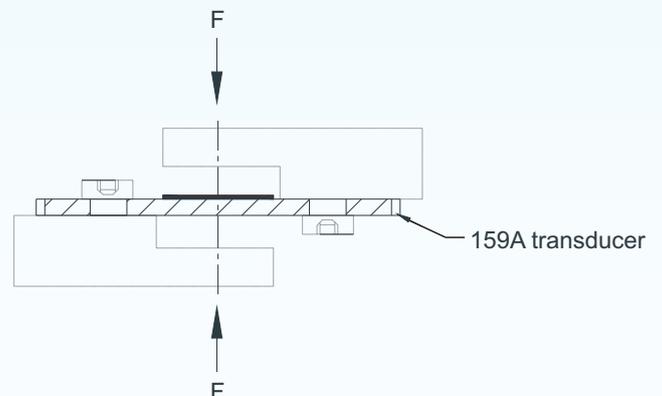
- force measurement
- force control
- medical instrumentation
- home appliances

## Dimensions



\*: H is different for different capacity.

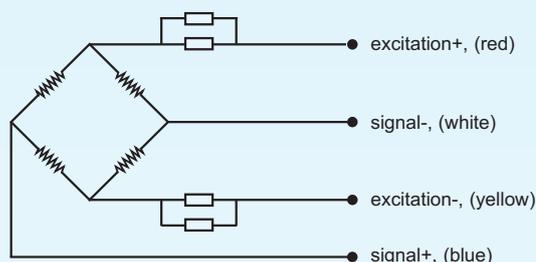
## Schematic Diagram of Reverse-Beam Mounting Arrangement



# Model 159A

## Miniature Force Transducers

### Electrical Connection



### Technical Data

Parameters	Units	Specifications	
capacity	N	1.2, 10, 20, 30, 50, 70, 100, 150, 200, 300, 400, 500	
safe load limit	%fs	150	
ultimate overload	%fs	200	
output sensitivity at fs	mV/V	1.5 ±10%, ≥ 1.2 for 1.2N capacity	
zero unbalance	%fso	-13.3 ~ +66.7 (*)	
non-linearity	%fs	≤ ±0.1	≤ ±0.2 (standard), ±1 in case of 1.2N capacity
hysteresis	%fs	≤ ±0.05	≤ ±0.1, ±0.5 in case of 1.2N capacity
repeatability	%fs	≤ ±0.05	≤ ±0.1, ±0.25 in case of 1.2N capacity
creep error (5 min.)	%fs	≤ ±0.05	≤ ±0.1
excitation (supply voltage)	Vdc	6	
max. excitation voltage	Vdc	9	
input resistance	Ω	350 ±50	
output resistance	Ω	350 ±50	
insulation resistance	MΩ	≥ 2000 @50Vdc	
storage temp. range	°C	-35 ~ +80	
operating temp. range	°C	-20 ~ +65	
compensated temp. range	°C	-10 ~ +40	
temp. coefficient of sensitivity	%fso/°C	≤ ±0.01	
temp. coefficient of zero	%fso/°C	≤ ±0.02	
load cell body material		17-4PH stainless steel	
sealing		potted	
mechanical interface		refer to the dimensions on the datasheets	
electrical interface		4-color PVC isolated flying wires, 150mm	
environment protection		IP65	
unit weight	g	~1	

The listed specifications are subject to change without prior notice.

\*: According to the test data of "zero unbalance", model 159A sensors are classified into three groups. Assume the sensor is excited by 6 Vdc constant voltage, the classification is done according to the following conditions:

group-1: zero output is between -1200 ~ +1200 μV;

group-2: zero output is between +1201 ~ +3000 μV;

group-3: zero output is between +3001 ~ +6000 μV.

The sensors belong to the same group are packed in the same packages.

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### Ordering Information

<b>position (pos.) 1: model</b>									
159A									
<b>pos. 2: capacities</b>									
1.2N    70N    400N 10N    100N    500N 20N    150N 30N    200N 50N    300N									
<b>pos. 3: output sensitivity</b>									
1.5 mV/V									
<b>pos. 4: non-linearity or accuracy class</b>									
0.1%fs, 0.2%fs (standard), 1%fs (for 1.2N capacity)									
<b>pos. 5: bridge resistance</b>									
350Ω (Rin = 350±50Ω, Rout = 350±50Ω)									
<b>pos. 6: mechanical interface</b>									
Refer to the dimensions on the datasheets. Pos. 6 can be omitted from the ordering code.									
<b>pos. 7: electrical interface</b>									
4F/PVC/0.15 = 4-color PVC isolated flying wires, length = 0.15m*									
<b>pos. 8: environment protection</b>									
IP65									
<b>pos. 9: accessories for installation</b>									
N = NA**. In case of "NA", pos.9 can be omitted.									
<b>pos. 10: customized spec's</b>									
"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.									
<b>pos.1</b>	<b>pos. 2</b>	<b>pos. 3</b>	<b>pos. 4</b>	<b>pos. 5</b>	<b>pos. 6</b>	<b>pos. 7</b>	<b>pos. 8</b>	<b>pos. 9</b>	<b>pos. 10</b>

\*: This value can also be a customized value.

\*\* : NA = not available or not applicable

### Examples of Ordering Code

- standard load cell:  
159A-50N-1.5mV/V-0.2%fs-350Ω-4F/PVC/0.15-IP65
- customized load cell:  
159A-60N-1.5mV/V-0.2%fs-350Ω-4F/PVC/0.15-IP65-(\*)  
(\*): Customized capacity = 60N.

**BCM SENSOR TECHNOLOGIES BVBA**

