

ABL200 Flange Load Cell



The ABL200 Series is a flange-type tension sensor designed with a dual beam tension load cells designed to maximize performance and reliability. The unique dual beam load cell design reduces load cell deflection by more than 66% compared to traditional load cell designs. Lower deflection means fewer tracking and steering problems on your machine and greater accuracy in the control.

This series is available in both metric and imperial standard dimensions, with multiple rated load options, delivering performance at an industry-leading level.

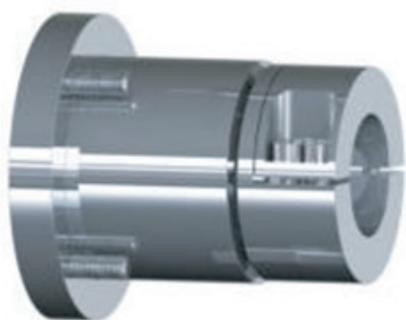
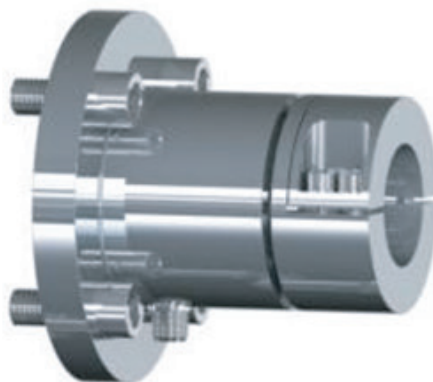
Key Features

- Compact stainless steel body
- Twin Parallel Beam design ensuring high output at a minimum deflection
- Dual beam giving lowest possible deflection
- Choose between Semiconductor or Foil strain gauge
- Industry standard M12x1 connector. With turn able socket for L-plug
- Connector position available in 4 different positions relative to the load direction
- Overload ratings up to 10 times nominal load rating
- Flexible head automatically compensates for changes in axial load and shaft linear expansion



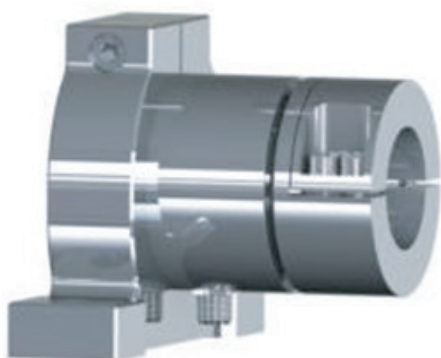
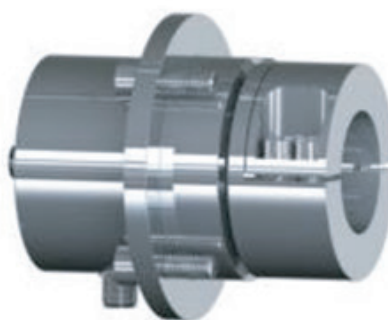
ABL210 and 220 are center bolt mount types of load cells. The connector M12x1 is always radially oriented

ABL210F and 220F are center bolt mount types of load cells. The connector M12x1 is always radially oriented.



ABL210C and 220C are through-frame flange mount types of load cells. The connector M12x1 is always axially oriented.

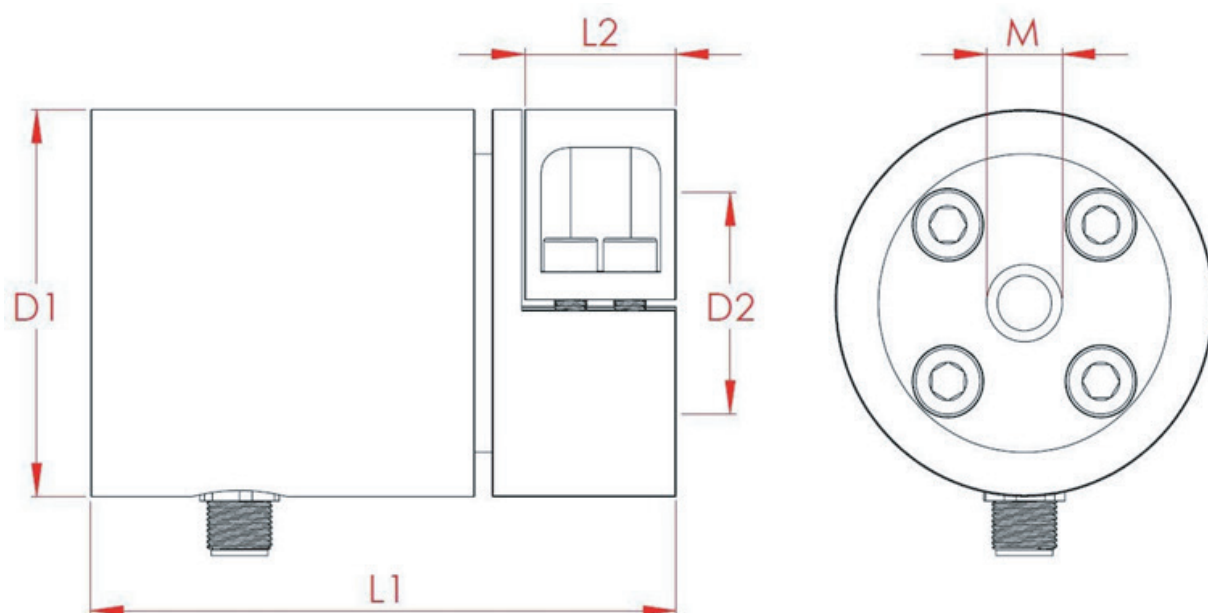
ABL210C20 and 220C20 are recessed flange mount types of load cells. The connector M12x1 is as standard radially oriented and available as axially oriented. The flange position can be changed on customer request.



ABL210P and 220P are split pillow block types of load cells. The connector M12x1 is as standard radially oriented and available as axially oriented. With the connector axially oriented the load cell body can be moved in to the split pillow block.

Dimensions for ABL210 and ABL220

Center Bolt Mount Load Cells

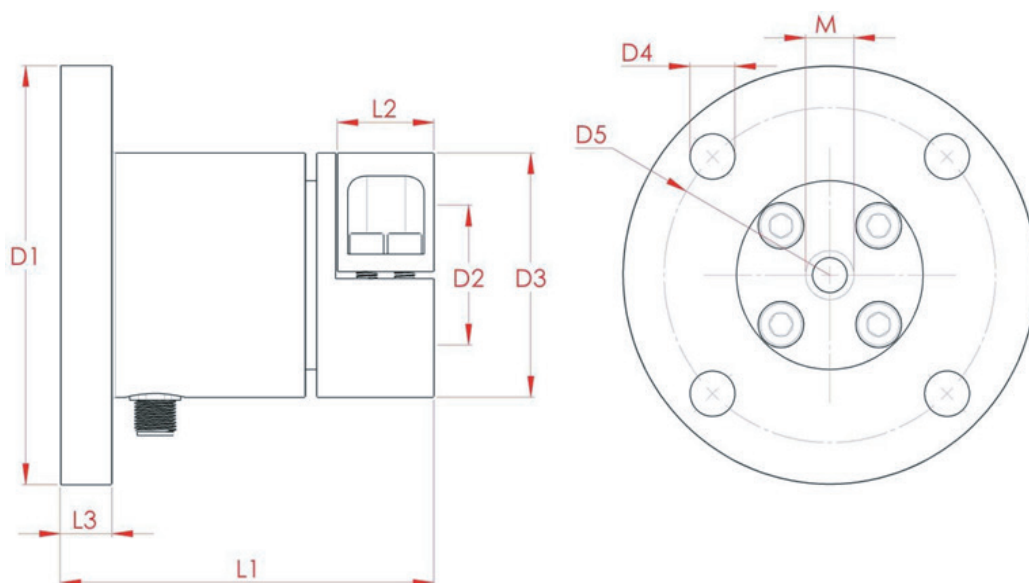


Dimension mm and Inches						
Type		D1	D2	L1	L2	M
ABL210	mm	50	25	75	13	M10 x12
	in	1.97	1.00*	2.95	0.51	M10 x 0.47
ABL220	mm	70	40	108	28	M16 x 15
	in	2.76	1.50*	4.25	1.10	M16 x 0.59

Load rating N and Lbs.											
ABL210	N	25N	50N	125N	250N	375N	500N	750N			
	Lbs.	5.6	11	28	56	84	112	168			
ABL220	N					375N	500N	750N	1.250N	2.500N	5.000N
	Lbs.					84	112	168	281	562	1.124

*To be specified on order

Dimensions for ABL210F and ABL220F Surface Flange Mount Load Cells



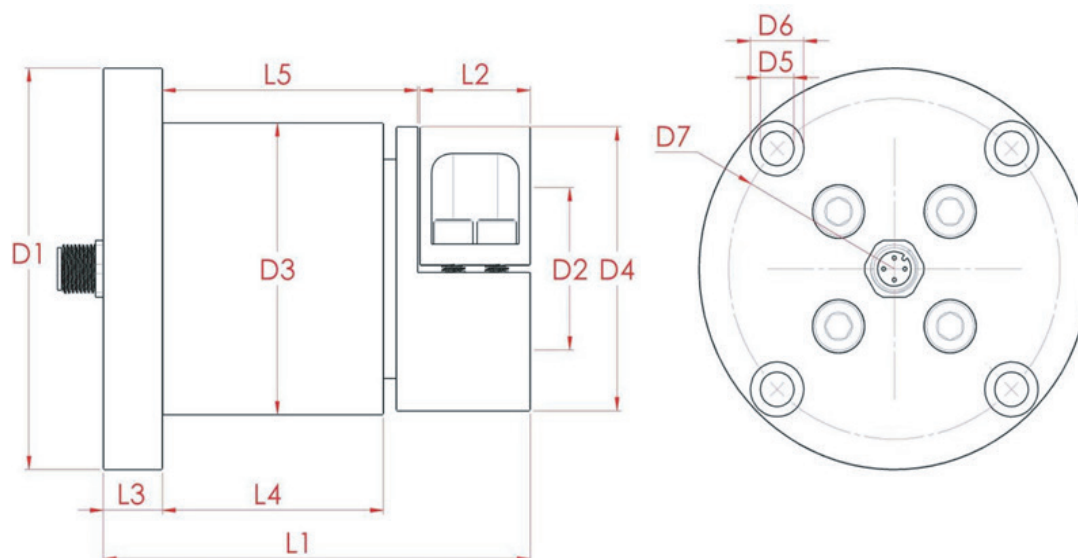
Dimension mm and Inches										
Type		D1	D2	D3	D4	D5	L1	L2	L3	M
ABL210F	mm	89	25	50	9	73	75	13	12	M10 x 12
	in	3.50	1.00*	1.97	0.35	2.87	2.95	0.51	0.47	M10 x 0.47
ABL220F	mm	120	40	70	13	96	108	28	15	M16 x 15
	in	4.72	1.50*	2.76	0.51	3.78	4.25	1.10	0.59	M16 x 0.59

Load rating N and Lbs.											
ABL210	N	25N	50N	125N	250N	375N	500N	750N			
	Lbs.	5.6	11	28	56	84	112	168			
ABL220	N					375N	500N	750N	1.250N	2.500N	5.000N
	Lbs.					84	112	168	281	562	1.124

*To be specified on order

Dimensions for ABL210C and ABL220C

Through-frame Flange Mount Load Cells



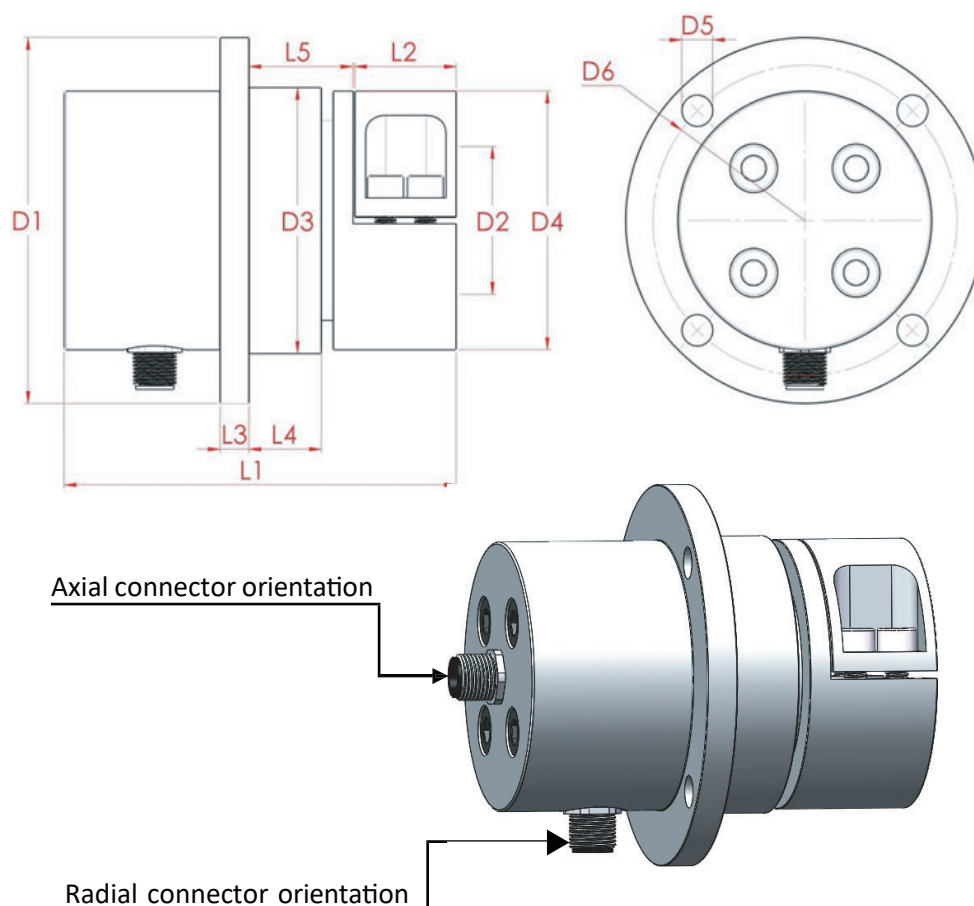
Dimension mm and Inches													
Type		D1	D2	D3	D4	D5	D6	D7	L1	L2	L3	L4	L5
ABL210C	mm	79	25	52	50	6,5	10,5	64	75	13	12	43	64,5
	in	3.11	1.00*	2.04	1.98	0.26	0.2"	2.52	2.95	0.51	0.47	1.69	2.54
ABL220C	mm	99	40	72	70	8,5	13,5	84	108	28	15	56	49,5
	in	3.90	1.50*	2.93	2.76	0.33	0.53	3.31	4.25	1.10	0.59	2.20	1.95

Load rating N and Lbs.											
ABL210	N	25N	50N	125N	250N	375N	500N	750N			
	Lbs.	5.6	11	28	56	84	112	168			
ABL220	N					375N	500N	750N	1.250N	2.500N	5.000N
	Lbs.					84	112	168	284	562	1.124

*To be specified on order

Dimensions for ABL210C20 and ABL220C20

Recessed Flange Mount Load Cells



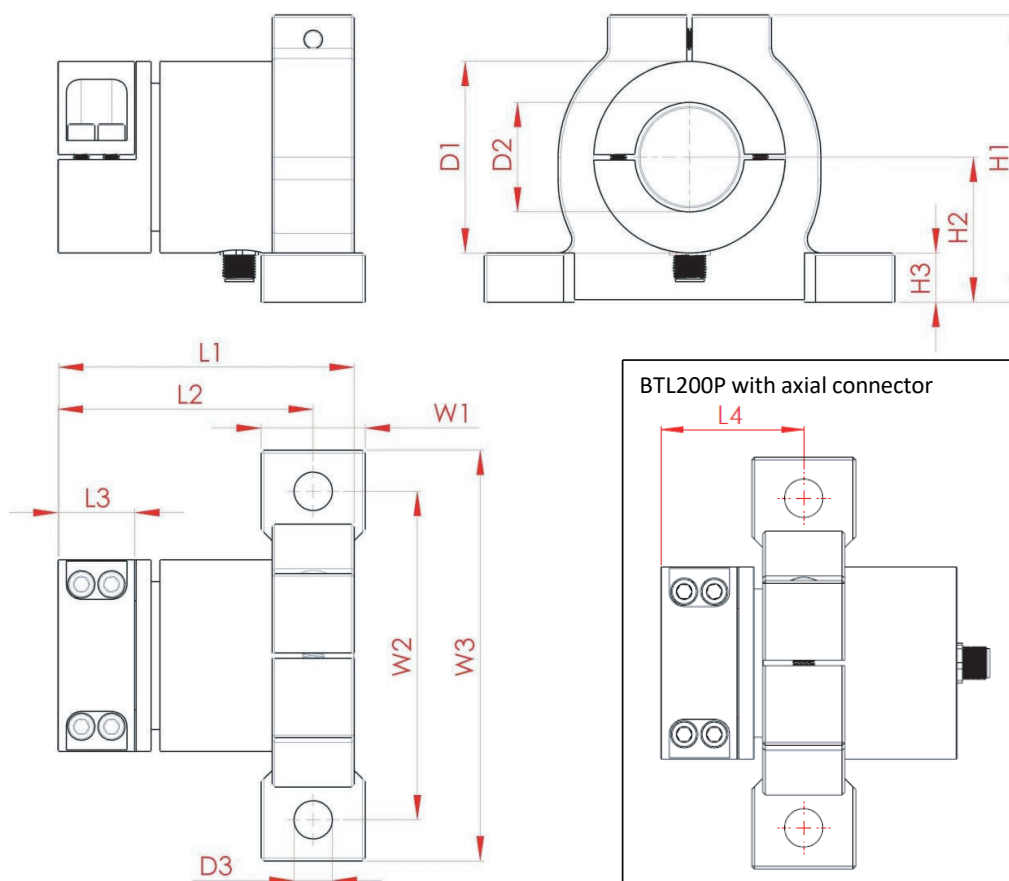
Dimension mm and Inches												
Type		D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5
ABL210C20	mm	79	25	52	50	6,5	64	75	13	6	20	26,5
	in	3.11	1.00*	2.05	1.97	0.26	2.52	2.95	0.51	0.24	0.79	1.04
ABL220C20	mm	99	40	72	70	8,5	84	108	28	8	20	28,5
	in	3.90	1.50*	2.83	2.76	3.35	3.31	4.25	1.10	0.31	0.79	1.12

Load rating N and Lbs.											
ABL210	N	25N	50N	125N	250N	375N	500N	750N			
	Lbs.	5.6	11	28	56	84	112	168			
ABL220	N					375N	500N	750N	1.250N	2.500N	5.000N
	Lbs.					84	112	168	281	562	1.124

*To be specified on order

Dimensions for ABL210P and ABL220P Split

Pillow Block Mount Load Cells



Dimension mm and Inches														
Type		D1	D2	D3	L1	L2	L3	L4	H1	H2	H3	W1	W2	W3
ABL210P	mm	50	25	9,5	75	65	13	30	83	37	12	20	94	116
	in	1.97	1.00*	0.37	2.95	2.56	0.51	1.18	3.27	1.46	0.47	0.79	3.70	4.57
ABL220P	mm	70	40	14	111	93	28	52	105	53	18	38	120	150
	in	2.76	1.50*	0.55	4.37	3.66	1.10	2.05	4.13	2.09	0.71	1.5	4.72	5.91

Load rating N and Lbs.											
ABL210	N	25N	50N	125N	250N	375N	500N	750N			
	Lbs.	5.6	11	28	56	84	112	168			
ABL220	N					375N	500N	750N	1.250N	2.500N	5.000N
	Lbs.					84	112	168	281	562	1.124

*To be specified on order

Calculating the sizing force for ABL200 Load Cell:

The correct Load Cell load rating for an application is determined by maximum web tension, web wrap angle around the roller, and mass of the roll.

The force $F(\text{roll})$ from the mass $m(\text{roll})$ of the roll, is determined as

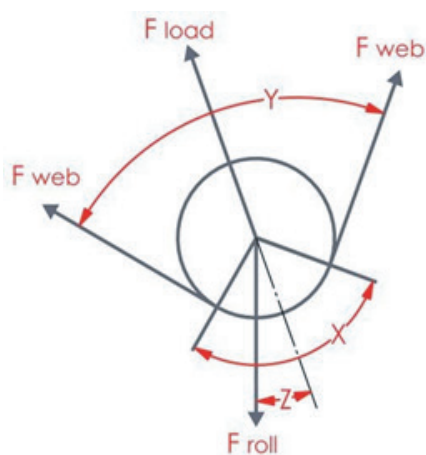
$$F(\text{roll}) = m(\text{roll}) \times 9.82 \text{ (N)} \quad (9.82 = \text{mass acceleration } m/s^2)$$

The force $F(\text{Load})$, from the web tension $F(\text{web})$, is determined as

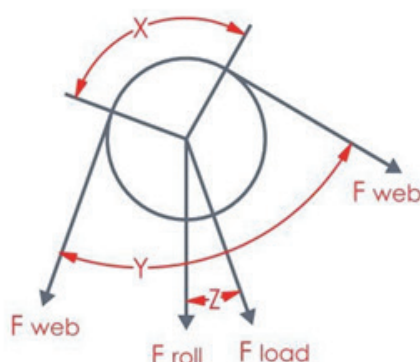
$$F(\text{Load}) = 2 \times F(\text{web}) \times \sin(X/2)$$

To determine the load cell size the 2 forces must be added together

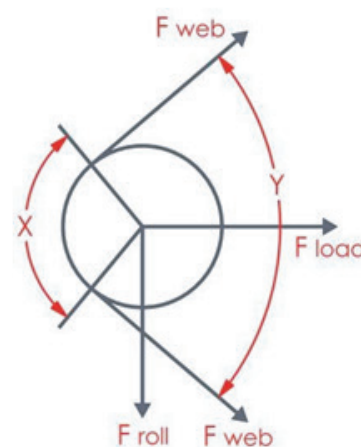
Load direction upwards:



Load direction downwards:



Load direction Sideways:



$$((\frac{1}{2} \times F(\text{Load}) \times 1,5) - (\frac{1}{2} F(\text{roll}) \times \cos(Z)))$$

$$((\frac{1}{2} \times F(\text{Load}) \times 1,5) + (\frac{1}{2} F(\text{roll}) \times \cos(Z)))$$

$$(\frac{1}{2} \times F(\text{Load}) \times 1,5)$$

(1,5 = Safety factor)

Note:

The minimum load cell size has to be $> \frac{1}{2} \times F(\text{roll})$

$m(\text{roll})$ = The mass of the roller in kg, $F(\text{web})$ = Maximum web tension,

Z = Angle between $F(\text{Load})$ and vertical, X = Web wrap angle = $180^\circ - Y^\circ$

Specifications half bridge:

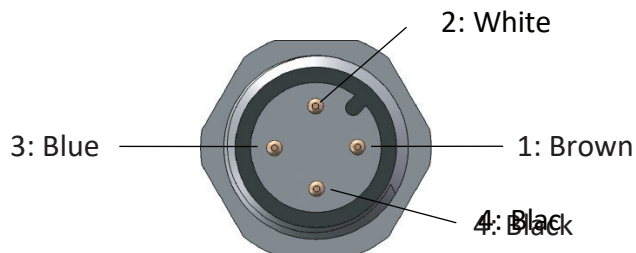
Max operating force relative to F_n	150%
Force limit relative to F_n	200%
Strain gauge resistance	80 to 120 ohm
Strain gauge configuration	half bridge
Supply	5VDC
Nominal output	mV/V
Combined error relative to F_n	< 0.5%
Temperature coefficient	< 0.4% / 10K
Operating temperature range	(-4 to 185° F) -20 to +85° C
Deflection at F_n	(< 0.0039") < 0.1 mm

Specifications full bridge:

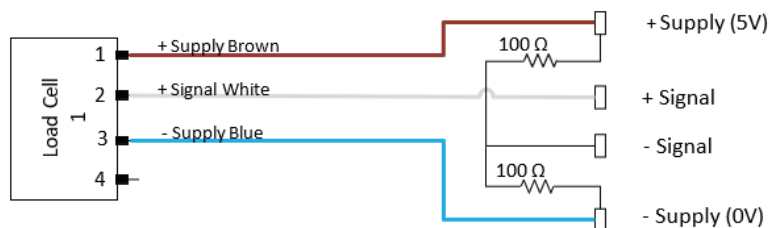
	150%
	200%
Foil gauge resistance	350 ohm
Foil gauge configuration	full bridge
	10VDC
	mV/V
	< 0.5%
	< 0.4% / 10K
	(-4 to 185° F) -20 to +85° C
	(< 0.0039") < 0.1 mm

Semiconductor Strain Gauge Half Bridge:

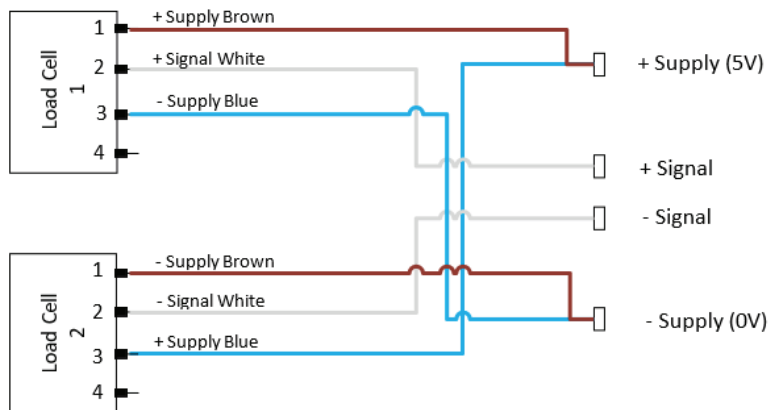
M12 - 4 pin male, Code A, IEC61076-2-101



One Half Bridge Semiconductor (120 Ohm)

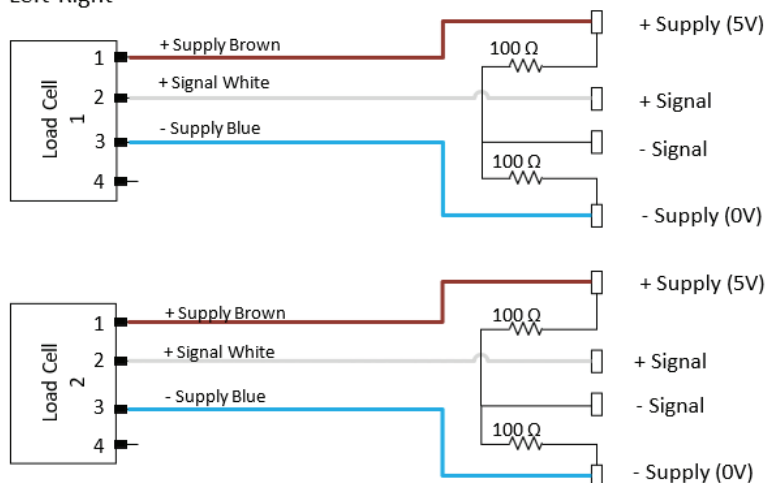


Two Half Bridge Semiconductors (120 Ohm)



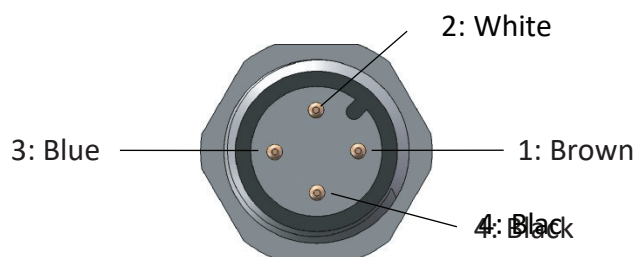
Two Half Bridge Semiconductors (120 Ohm)

For Total-Left-Right

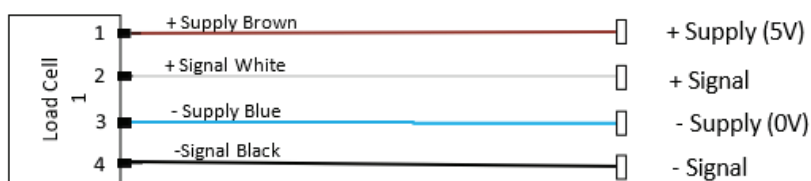


Foil Gauge Full Bridge:

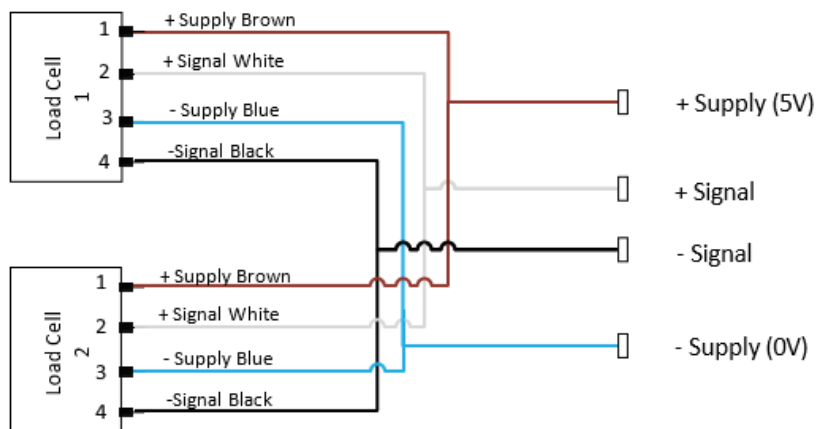
M12 - 4 pin male, Code A, IEC61076-2-101



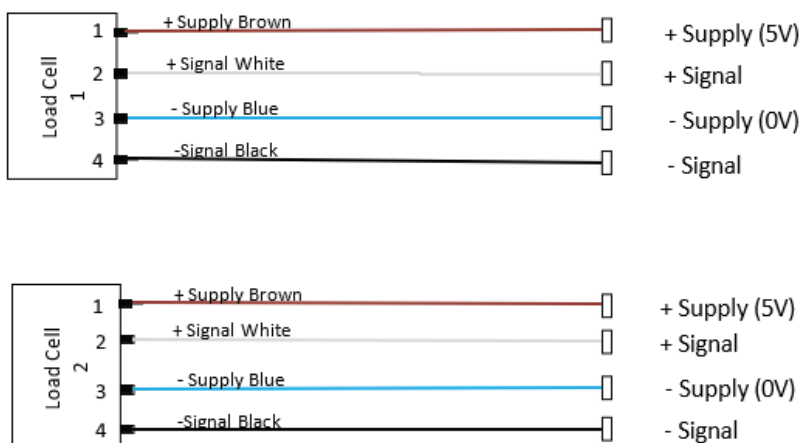
One Full Bridge Foil Gauge (350 Ohm)



Two Full Bridge Foil Gauge (350 Ohm)



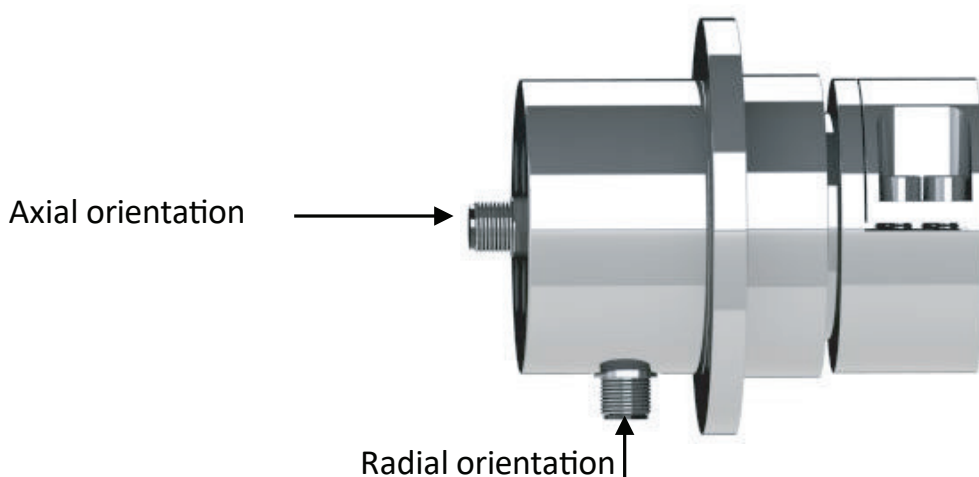
Two Full Bridge Foil Gauge (350 Ohm) For Total-Left-Right



Connector orientation and position:

All Load Cells comes with an M12x1 standard connector. The connector orientation and position is available in different alternative version depending on the type of Load Cell and if not mentioned on order the following standards will be used.

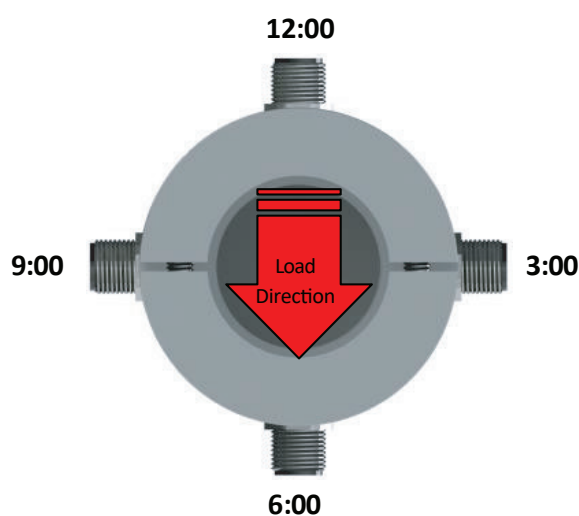
Connector orientation:



Type of load Cell	Standard orientation	Alternative orientation
ABL 210 and ABL 220	Radial	NA
ABL 210F and ABL 220F	Radial	NA
ABL 210C and ABL220C	Axial	NA
ABL 210C20 and ABL 220C20	Radial	Axial
ABL 210P and ABL 220P	Radial	Axial

Connector position and load direction:

If the Load Cell comes with a radial oriented connector there are 4 possible mounting positions for the connector named as 3:00 o'clock, 6:00 o'clock, 9:00 o'clock and 12:00 o'clock, please see illustration. The 3:00 o'clock and 9:00 o'clock comes as pair for the connectors to point in same direction, when load cells are mounted pointing towards each other. As standard the Load Cells comes with the 6:00 o'clock connector position and load direction will be the same as shown on the label. Any other connector position has to be specified on order.



Contact Us

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