COLUMN FORCE SENSOR EMS140

Special features

- For general purpose
- Strain gauge measuring system
- Tension
- Made of high-grade stainless steel
- Small dimensions
- It can be delivered with a built-in signal conditioner – see **EMS141**

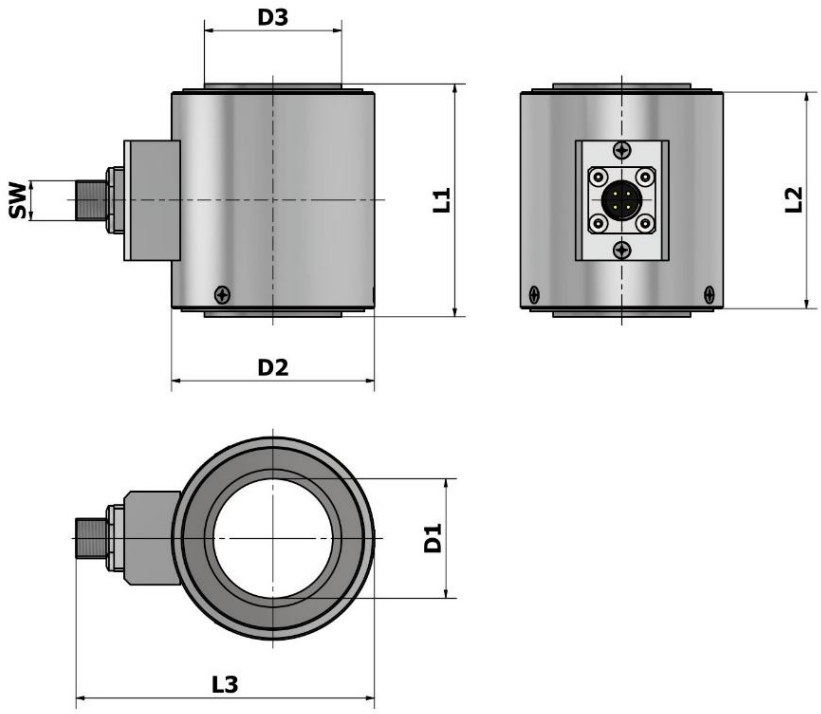
Specifications

Parameter	Value	Unit
Rated capacity (Fn)	20, 50, 100, 200	kN
Overload - *Safe* - *Ultimate* - *Permanent static load* [1] - *Dynamic load* [1]	 130 150 75 50	 % F_n % F_n % F_n % F_n
Nominal sensitivity (Cn)	1.5 ± 2 %	mV/V
Zero balance	2	% F.S.
Max error - *Non-linearity* - *Hysteresis*	 0.25 0.25	 % F.S. % F.S.
Temperature effect - *On zero* - *On output*	 0.1 0.1	 % F.S./10 °C % F.S./10 °C
Bridge resistance - *Input* - *Output*	 375 ± 20 350 ± 10	 Ω Ω
Insulation Impedance	> 500	MΩ
Excitation [2] - *Recommended* - *Maximal*	 5 … 10 15	 V V
Temperature range - *Compensated* - *Operating*	 0 ... + 50 – 10 ... + 70	 °C °C
Protection	IP54	
Connection - *Connector type*	 M12, 4 pin	
Construction	Stainless steel	

Notes:
1 Recommended value
2 DC or AC Voltage

2026-01

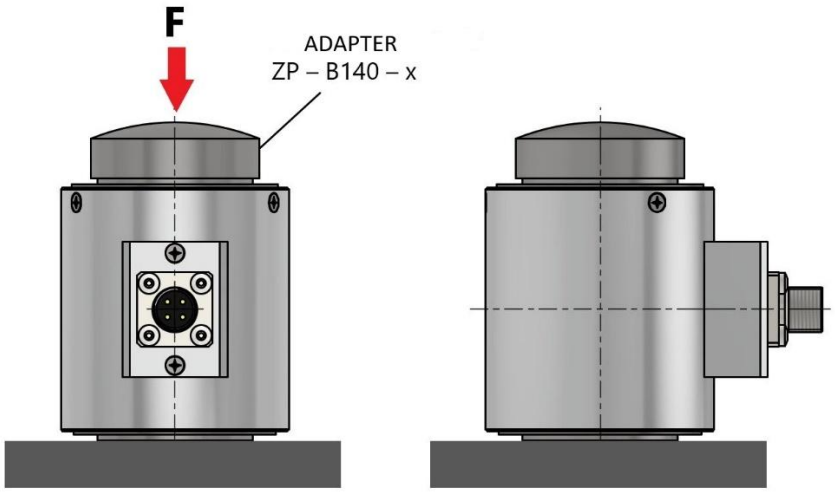
Outline dimensions



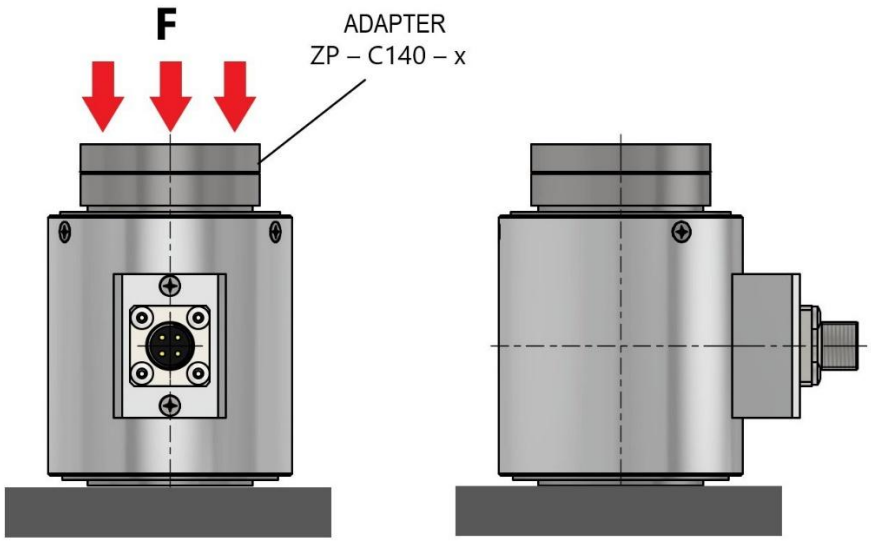
Rated capacity F_n kN	Dimensions in mm							Mass kg	Deflection, @ F_n (µm)
	D1	D2	D3	L1	L2	L3	SW		
20	16	36	18.6	50	45	63	M12x1	0.16	60
50	24	46	28.0	60	55	74	M12x1	0.26	80
100	36	61	41.4	70	65	90	M12x1	0.48	100
200	48	76	55.8	80	75	106	M12x1	0.86	120

Recommended installation

Loading using ball adapter



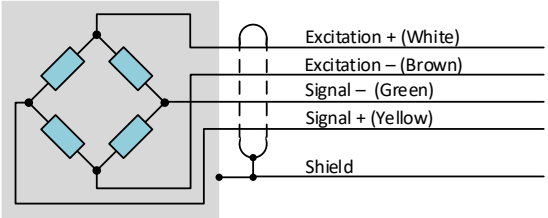
Loading using spherical washers



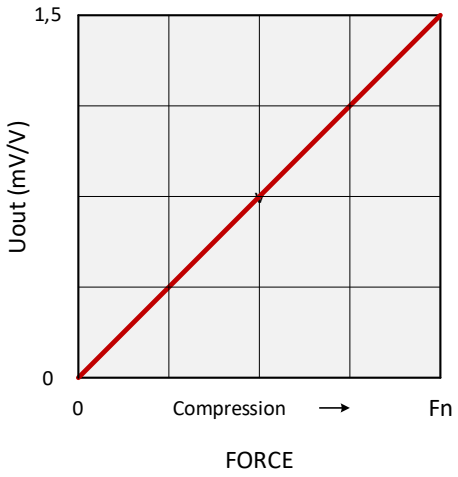
Type of sensor	Adapter type B [1]	Adapter type C [2]
EMS140 – 20 kN	ZP – B140 – 20	ZP – C140 – 20
EMS140 – 50 kN	ZP – B140 – 50	ZP – C140 – 50
EMS140 – 100 kN	ZP – B140 – 100	ZP – C140 – 100
EMS140 – 200 kN	ZP – B140 – 200	ZP – C140 – 200

Notes:
1. The adapter is pressed with a flat surface (the contact is point – like).
2. The force must be applied evenly over the entire surface of the adapter.

Sensor wiring diagram

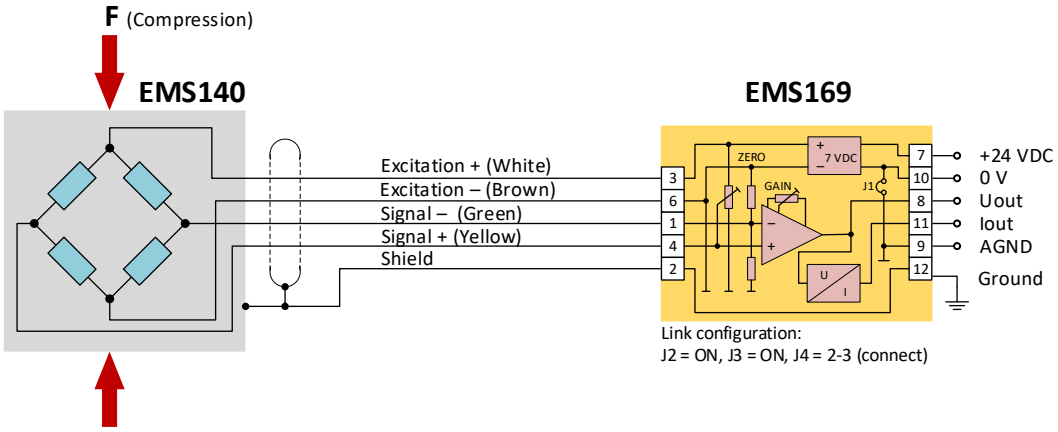


Sensor output characteristic

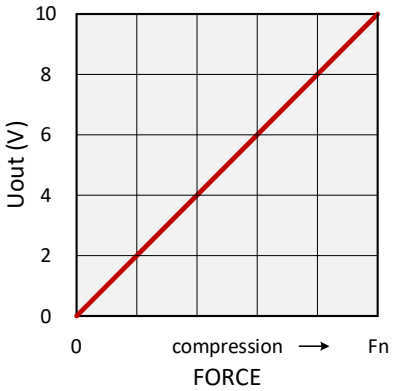


Connection example to EMS169 signal conditioner

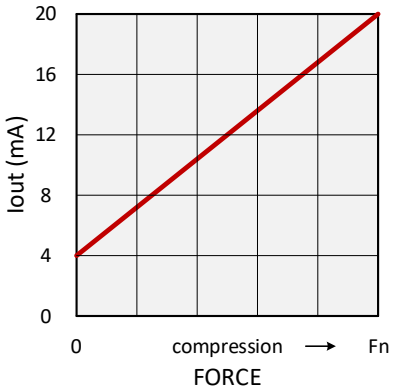
Wiring diagram



Output characteristics

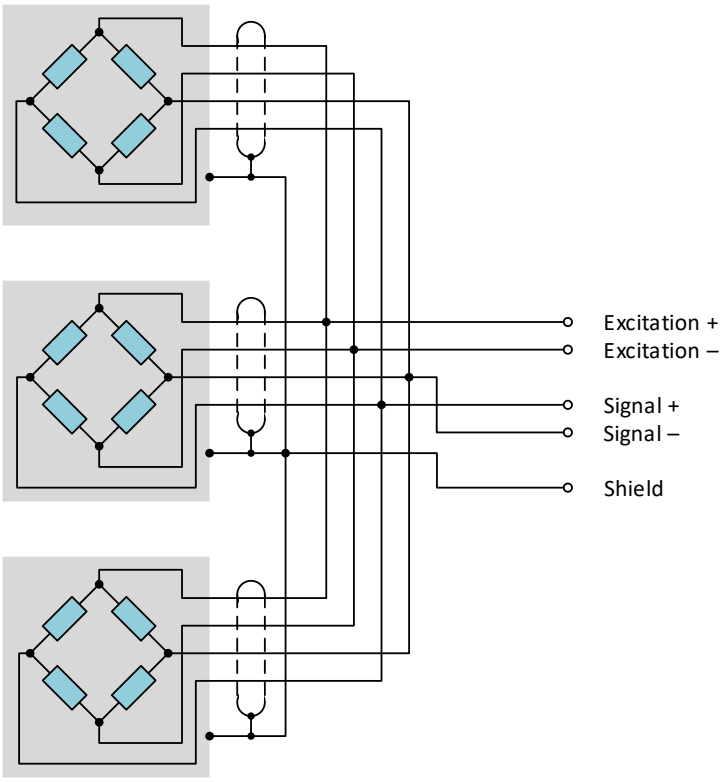


Uout vs. F



Iout vs. F

Parallel wiring diagram



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