

IN-LINE FORCE SENSOR WITH BUILT-IN SIGNAL CONDITIONER

Special features



- Mechanical design identical to **EMS150** type
- Tension / Compression measurement
- Stainless steel construction
- Built-in signal conditioner
 - with voltage output: **EMS151-U**
 - with current output: **EMS151-I**
- Power supply: **+ 5 ... + 24 VDC**

Specifications

Rated capacity F_n	0.5, 1, 2, 5, 10, 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
Sensor with voltage output (model EMS151-U) ^{2,3,4} - Standard ($V_{SUP} = 5\text{ V}$) - With zero offset ($V_{SUP} = 5\text{ V}$) - Standard ($V_{SUP} = 24\text{ V}$) - Standard bipolar ($V_{SUP} = 24\text{ V}$) - With zero offset ($V_{SUP} = 24\text{ V}$)	0.5 ... 4.5 2.5 ... ± 2 2 ... 10 - 10 ... + 10 6 ... ± 4	V V V V V
Min. load impedance	20	kΩ
Sensor with current output (model EMS151-I) ^{2,4} - Standard ($V_{SUP} = 24\text{ V}$) - With zero offset ($V_{SUP} = 24\text{ V}$)	4 ... 20 12 ... ± 8	mA mA
Max. load impedance	500	Ω
Power Supply - Range - Current consumption (max)	5 ... 27 40	VDC mA
Max error - Non-linearity - Hysteresis	0.2 0.2	% F.S. % F.S.
Temperature effect - On zero - On output	0.15 0.15	% F.S./10 °C % F.S./10 °C
Temperature range - Nominal - Operating	0 ... + 50 - 10 ... + 50	°C °C
Protection	IP54	
Connection - Cable - Type - Length - Connector (Type)	LiYCY 4 x 0.14 2 M12, 4 pin	m

Notes:

- 1 Recommended value
- 2 The sensor has only voltage or current output.
- 3 At the voltage output, the supply voltage of the sensor must be at least 0.5 V higher than the maximum output voltage ($V_{SUP} \geq V_{OUT_MAX} + 0.5\text{ V}$).
- 4 After agreement with the manufacturer, it is possible to set another output.

How to order

Common formula for ordering: ***EMS151-U/I(signal conditioner output range) – force range***

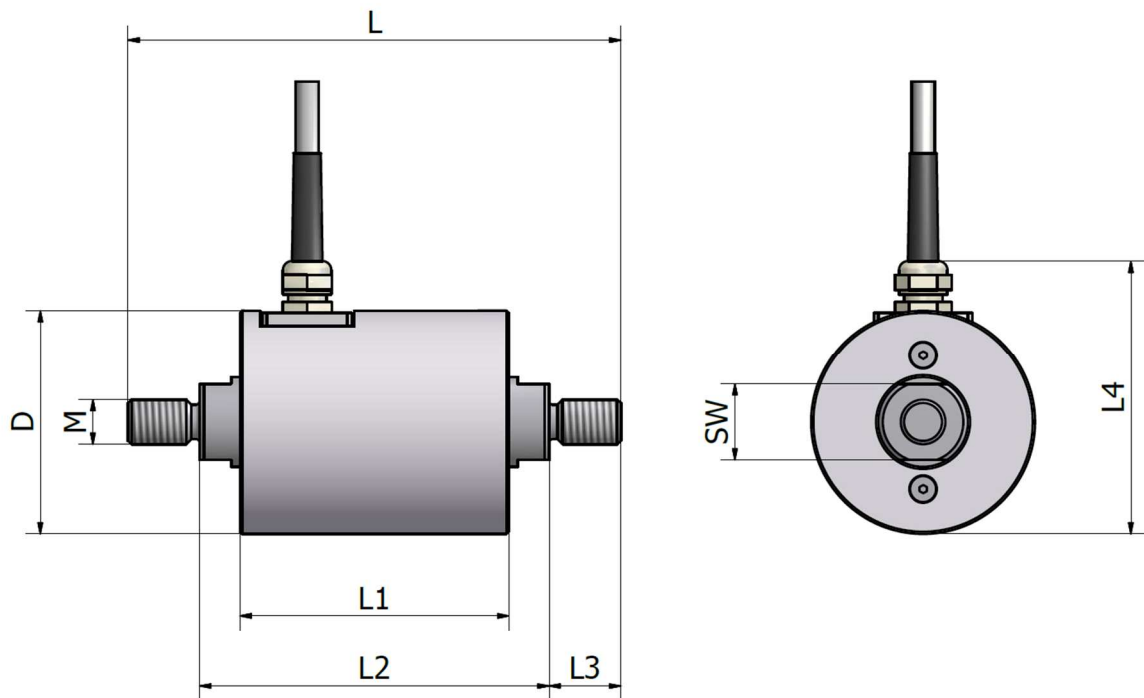
- Sensor type with type of output:
 - ***EMS151-U*** – voltage output
 - ***EMS151-I*** – current output
- Signal conditioner voltage output types:
 - 0.5 – 4.5 V
 - 0.5 – 2.5 – 4.5 V (zero shifted to 2.5 V)
 - 2 – 10 V
 - ± 10 V
 - 2 – 6 – 10 V (zero shifted to 6 V)
- Signal conditioner current output types:
 - 4 – 20 mA
 - 4 – 12 – 20 mA (zero shifted to 12 mA)
- Measured force range (kN): 0.5, 1, 2, 5, 10, 20, 50, 100, 200

Examples:

20 kN sensor with voltage output – 10... + 10 V:
EMS151-U (± 10 V) – 20kN

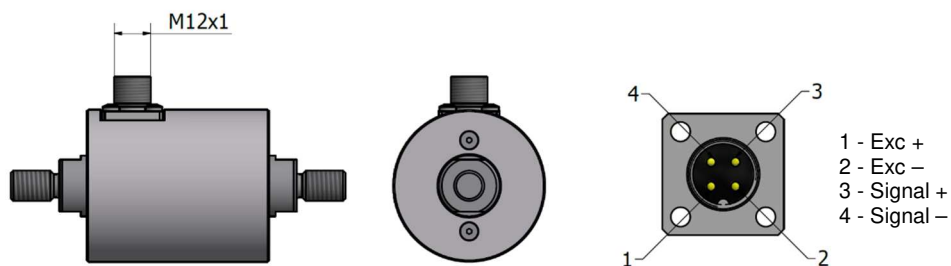
5 kN sensor with current output with shifted zero:
EMS151-I (4 – 12 – 20mA) – 5kN

Outline dimensions

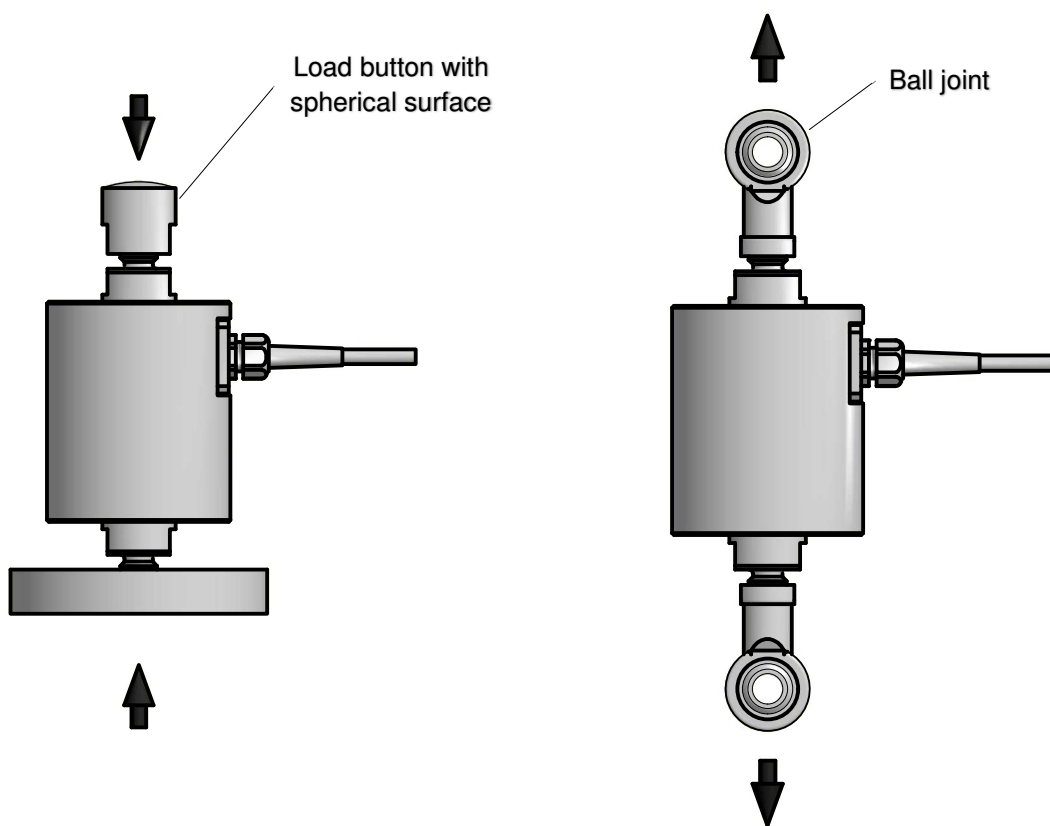


Rated capacity F_n , kN	A mm	B mm	C mm	D mm	E mm	F mm	G mm	SW mm	Mass kg	Deflection @ F_n , μm
0.5	95	55	71	45	55	12	M8	13	0.22	60
1	95	55	71	45	55	12	M8	13	0.23	60
2	110	60	78	50	60	16	M10	17	0.33	60
5	110	60	78	50	60	16	M10	17	0.37	60
10	140	80	100	60	70	20	M12	19	0.64	71
20	150	80	104	60	70	23	M16	24	0.86	84
50	170	80	108	60	70	31	M24	30	1.38	102
100	240	100	136	80	90	52	M36	46	3.63	123
200	300	120	166	100	110	67	M48	65	8.00	185

Version with connector (optional)



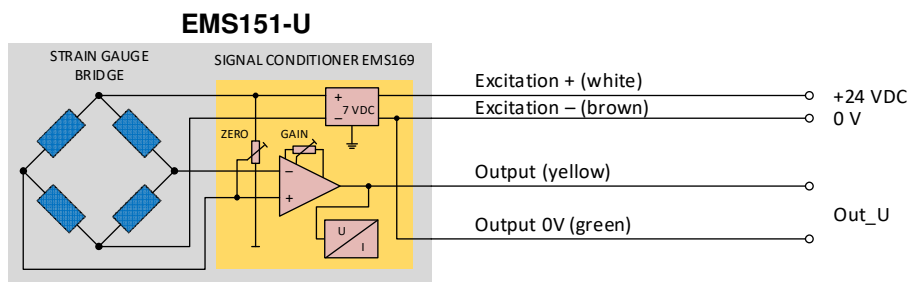
Recommended installation



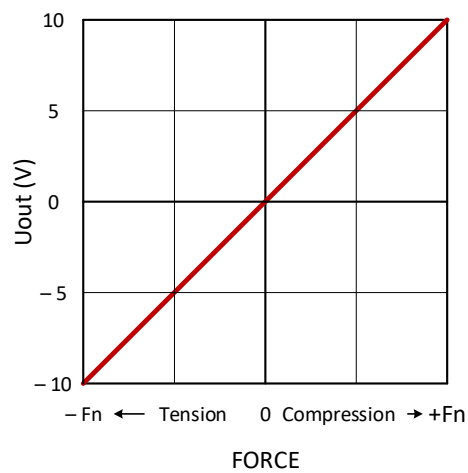
Direction of load COMPRESSION

Direction of load TENSION

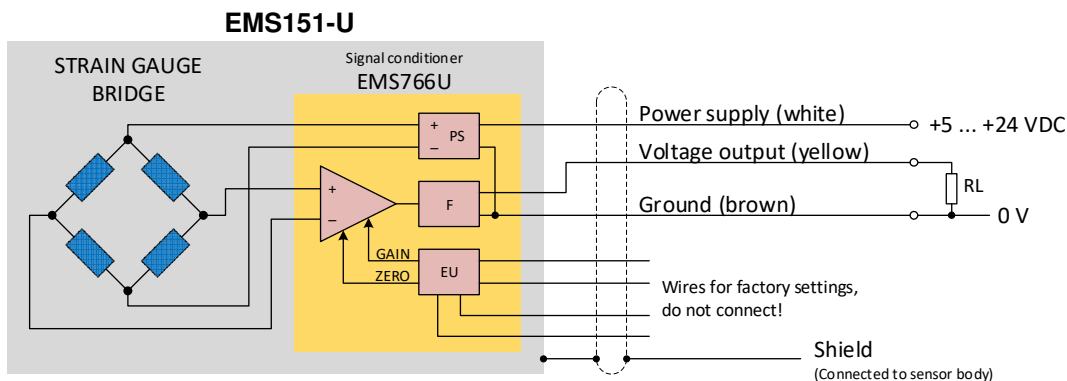
Sensor wiring with bipolar voltage output



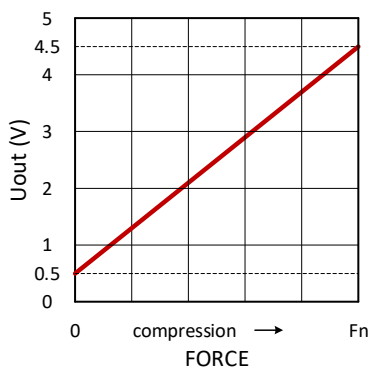
Output characteristic



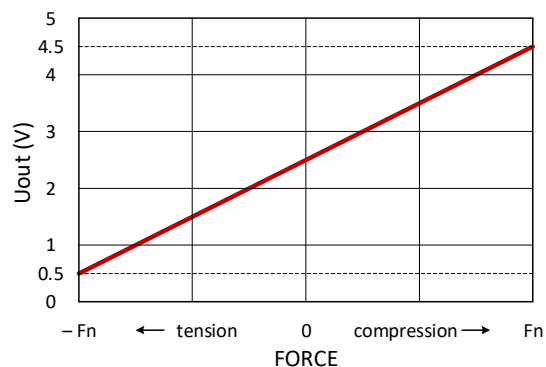
Sensor wiring with unipolar voltage output



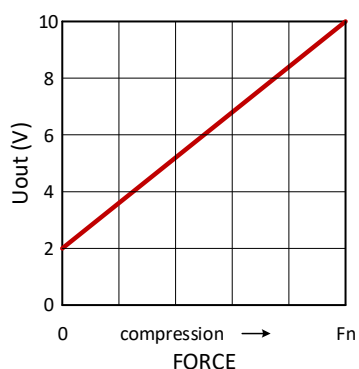
Output characteristics



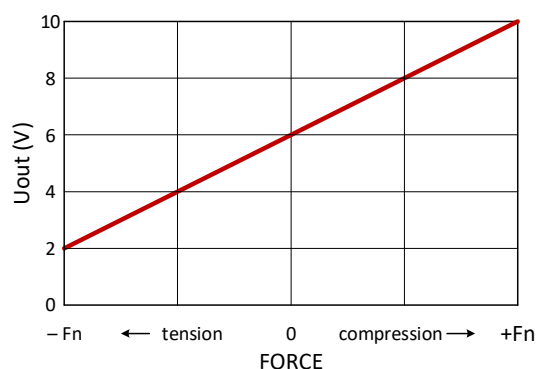
Unipolar load, unipolar output
 $0.5 \dots 4.5$ V



Bipolar load, unipolar output
 $2.5 \text{ V} \pm 2 \text{ V}$, with zero offset

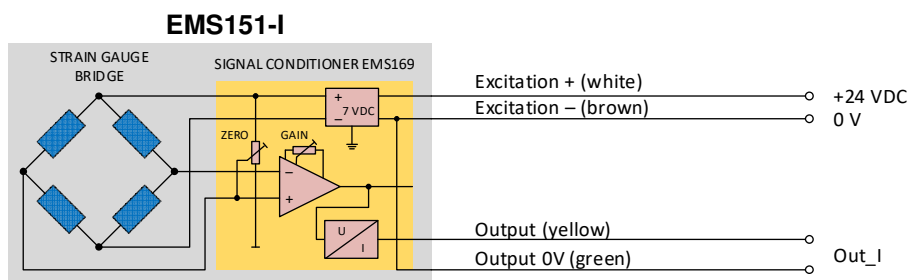


Unipolar load, unipolar output
 $2 \dots 10$ V

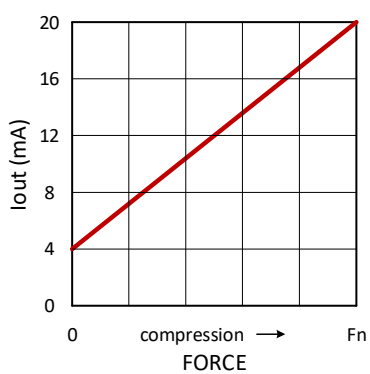


Bipolar load, unipolar output
 $6 \text{ V} \pm 4 \text{ V}$, with zero offset

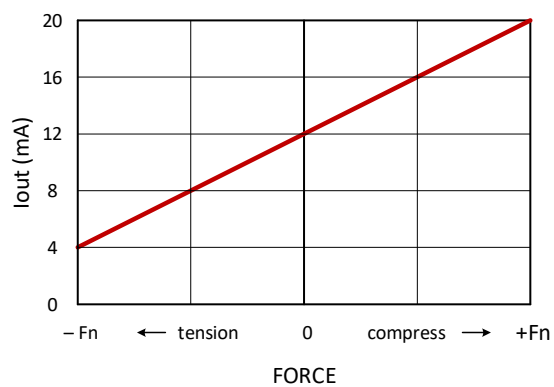
Sensor wiring with current output



Output characteristics



Unipolar load, unipolar output
 4 ... 20 mA



Bipolar load, unipolar output
 12 mA ± 8 mA, with zero offset