

S-Beam Tension and Compression Load Cell

MODEL 8512



Highlights

- Measuring ranges from 0 ... 20 N to 0 ... 880 N
- Non-linearity < 0,25 % v.E.
- Many load cycles
- Protection class IP54
- Excellent price-performance ratio

Option

- 3-fold overload protection

Applications

- Dosing system
- Automated tool testing
- Tension force measurement for wire or thread winders
- Test and analysis systems in the pharma industry
- Withdrawal force
- Measuring loads in cable systems



Cable outlet with strain relief



Overload protection in compression direction

Product description

The measuring element of this load cell consists of a double bending beam with strain gages, the resistance of which changes with the application of force. Upon applying a voltage to the strain gage bridge, the change in the strain gage resistance is converted into output voltage, which is directly proportional to the force. The strain gages and the entire measuring element are protected from water spray by metal cover including sealing material.

The tensile or compressive load to be measured is applied to the sensor element through the M6 threaded hole located on each end face. The load can be applied easily, along the sensor axis. This serves to prevent falsification of the measured values. Overload protection can be realized with little effort using a mechanical stop.

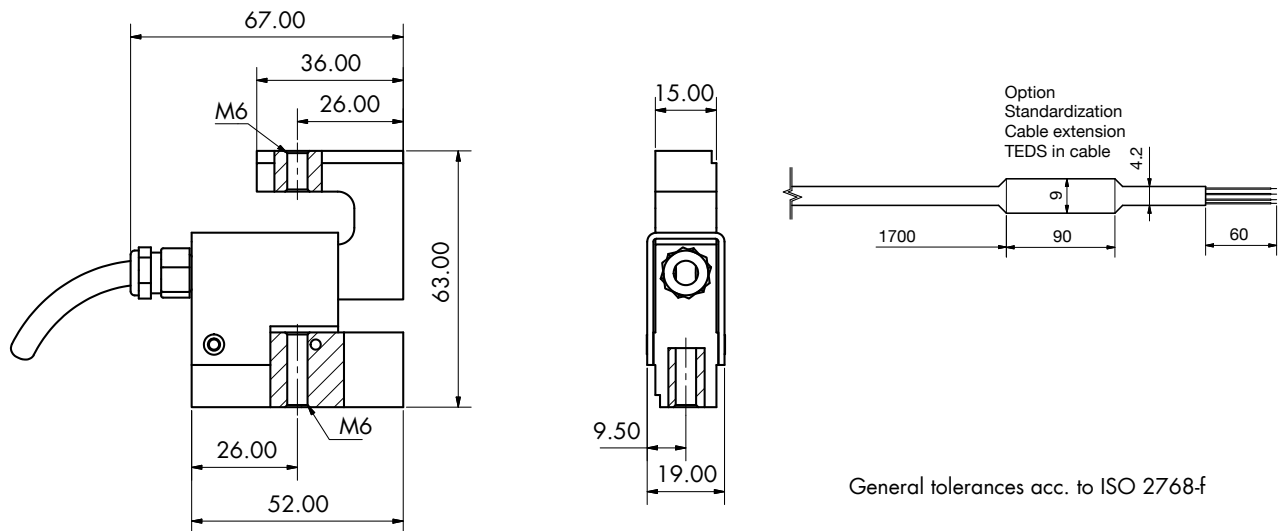
Technical Data

8512	-	5020	5050	5100	5220	5440	5880
Measuring range calibrated in N from 0 ...		±20 N	±50 N	±100 N	±220 N	±440 N	±880 N
		±4.5 lbs	±11.2 lbs	±22.5 lbs	±49.5 lbs	±98.9 lbs	±197.8 lbs
Accuracy							
Relative non-linearity*		≤ ±0.25 % F.S.					
Characteristic curve deviation*		≤ ±0.25 % F.S.					
Relative hysteresis		≤ 0.25 % F.S.					
Temperature effect on zero output		≤ ±0.03 % F.S./K					
Temperature effect on nominal sensitivity		≤ ±0.05 % F.S./K					
Electrical values							
Sensitivity nominal		1.6 mV/V	1.7 mV/V	2.7 mV/V			
Measurement direction		Tension and compression direction. Load calibration in compression direction The full-scale output is likely to be different when used in the tension direction. Positive signal in compression direction					
Standardization**		option 1,5 mV/V (±0,25 %)					
Bridge resistance		350 Ω nominal (deviations are possible)					
Excitation		max. 5 V	5 V DC (max. 10 V DC)				
Environmental conditions							
Nominal temperature range		+15 °C ... +70 °C					
Operating temperature range		-30 °C ... +90 °C					
Mechanical values							
Deflection full scale	[µm]	< 200					
Maximum operating force		120 % of capacity					
Overload burst		> 200 % of capacity					
Dynamic performance		recommended: 50 %					
Material		aluminium alloy					
Protection class (EN 60529)		IP54					
Geometry		5020	5050	5100	5220	5440	5880
		see dimensional drawing					
Installation							
Intended mounting screws		2 pcs. M6					
Tightening torque mounting screws	[N*m]	7					
Mounting screws		strength 8.8 or higher					
Installation instructions		Smooth flat fixing surface required, load must be applied centrally.					
Other							
Natural frequency	[kHz]	> 2					
Mass	[g]	140					

* The data in the area 20 % - 100 % of rated load F_{nom}

** Realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end (Temperature range for the optional TEDS or standardization board 0 ... +60 °C)

Dimensional drawing



Electrical termination

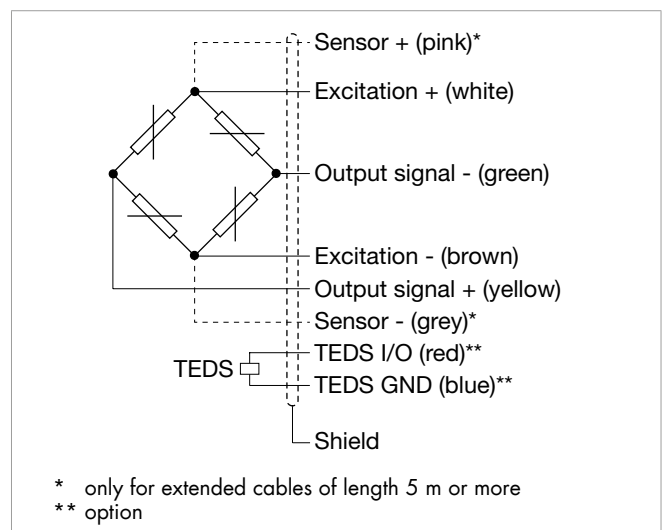
Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is highly dependent on the sensor supply voltage. Our website contains details of suitable instrumentation amplifiers, indicator and display devices and process instruments.



burster TEDS

The "burster Transducer Electronic Data Sheet" (TEDS) is a memory in which identification data of the sensor, calibration data and other sensor parameters are saved. In conjunction with your own suitable burster device, there is the option of performing a simple adjustment in order to achieve the maximum accuracy of the measuring chain. A simple sensor exchange is thus possible in just a few steps without losing precision.



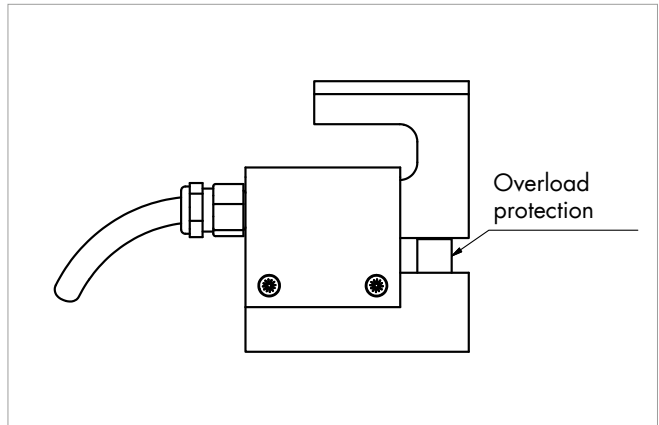
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Measuring range from 0 ...		±20 N	±50 N	±100 N	±220 N	±440 N	±880 N
Electrical termination							
Specifications		highly flexible, oil resistant, drag chains suitable					
Cable fastening		PG screwing					
Bending protection		no bending protection					
Bending radius		three times the diameter for fixed cable, ten times the diameter for cable permanently moving					
Cable model		PUR, Ø = 4.2					



Options

Overload protection in compression direction

The optional overload protection guards the load cell against damage at a static compression force up to 300 % of its service load. Protection is achieved via a mechanical stop, which limits the measurement displacement of the sensor.



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Measuring range from 0 ...		±20 N	±50 N	±100 N	±220 N	±440 N	±880 N
Electrical termination							
Overload protection	[N]	60	150	300	660	1320	2640

Calibration

Test and calibration certificate	
Included in scope of delivery of sensor	Amongst other data, includes figures for zero point, full-scale output and calibration offset
Standard factory calibration certificate for load cells or measurement chains (WKS)	
Optionally available	Our standard factory calibration is performed in 20% steps starting from zero until the reaching the nominal force, for increasing and decreasing load with unchanged installation position. Factory calibration can be performed in compression and/or tension direction.
Special factory calibration certificate for load cells or measurement chains (WKS)	
On request	We are happy to calibrate sensors and measurement chains to the customer's specification.
Calibration certificate with accreditation symbol for product group load cell 8512	
Optionally available	Calibration certificate with accreditation symbol for load cell 8512. Calibration is performed on the basis of the accreditation of the calibration laboratory D-K-15141-01-00, for the scope of accreditation listed in the annex to the certificate. The traceability to national standards as well as a wide international recognition (DAkkS as signatory of the Multilateral Agreements of EA, ILAC and IAF) are thus guaranteed. Calibration is performed according to ISO 376 in 10 force steps (10% steps) vstarting from zero until the reaching the nominal force, for increasing and decreasing load under various installation positions.

Order Code

Measuring range	Code				Measuring range
0 ... ±20 N	5	0	2	0	0 ... ±4.5 lbs
0 ... ±50 N	5	0	5	0	0 ... ±11.2 lbs
0 ... ±100 N	5	1	0	0	0 ... ±22.5 lbs
0 ... ±220 N	5	2	2	0	0 ... ±49.5 lbs
0 ... ±440 N	5	4	4	0	0 ... ±98.9 lbs
0 ... ±880 N	5	8	8	0	0 ... ±197.8 lbs

										Delivery ex stock at short notice								
										N	0	0	0	S	0	0	0	
8	5	1	2	-					-				0	S		0	0	
■ Nominal sensitivity/not standardized										N								
■ Standardization at 1,5 mV/V										E								
■ TEDS Platine im Kabel										T								
■ Connection cable 1.7 m (Standardization 2 m)										0								
■ Connection cable 3 m										F								
■ Connection cable 5 m (with sense line)										G								
■ Connection cable 3 m extended *										L								
■ Connection cable 5 m extended (with sens line) *										M								
* shortened delivery time compared with cable length 3 m and 5 m in one piece																		
■ Open cable ends + 6 cm single wires										0								
■ 9 pins Sub-D connector model 9900-V209										B								
■ 9 pins Sub-D connector model 9900-V209 for 9163-V3xxxx										E								
■ 12 pins round connector model 9941 for burster desktop devices										F								
■ 9 pins Sub-D connector with burster TEDS model 9900-V229										T								
■ Non-linearity 0.25 % F.S.										S								
■ No option																0		
■ Overload protection in compression direction (see table overload protection)																	4	

