

Miniatür Compression Load Cell

MODEL 8402



NEW option:
Dual-range in
different spreadings



Highlights

- Measuring ranges from 0 ... 1 kN up to 0 ... 100 kN
- Miniature dimensions
- Connecting cable suitable for drag chains
- Made of stainless steel

Options

- Standardized output signal 1.5 mV/V
- Dual range model
- Connecting cable attached centrally from below
- Form-fitted to prevent rotation
- burster TEDS

Applications

- Press-in force measurements on longitudinal and transversal connections
- Compression force measurements on punch and roller applicancy
- Spring tension measurements on shock absorbers for cars
- Contact pressure determination in push rods
- Compression force measurements on compressed-air knee-lever presses

Product description

This, related to its measuring range, miniaturized load cell enables an universal and reliable operation in industries and laboratories. It is well suited for compression measurements in very restricted structures. The load cell is a compact construction and made of stainless steel. Therefore it can be used in many fields of industry. Thanks to the rounded top, in shape of a little hat, the force to be measured is led into the sensor centrally and free of lateral force.

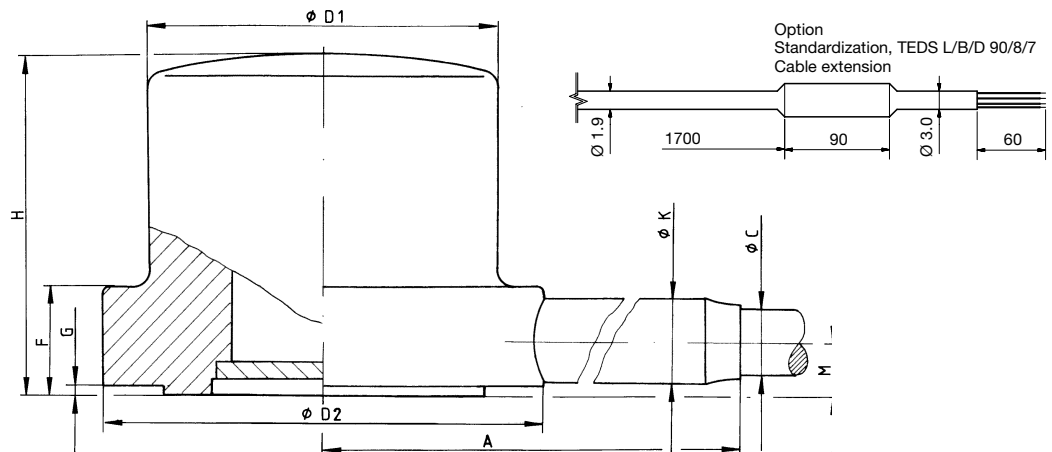
Strain gauges arranged in a full bridge are applied on the generated surface of the sensor. By applying a force to the strain gauge bridge the resistance change of the strain gauges is transformed into an output voltage which is directly proportional to the measured force. The load cells have to be mounted complete on a smooth, plane parallel surface. They can be fixed with contact glue or silicone. To achieve optimum measurement accuracy, protect the sensor from off-axis loads that will result in lateral or side forces.

Clamping forces must not be applied laterally to the circumferential surface of the sensor. During installation or mounting you have to take care that the cable outlet and the cable of the load cell are not stressed by tension and bending forces. In the connection cable of the sensor, the output signal is standardized to 1.5 mV/V, so that an exchange can easily be done, without the need to re-adjust the processing electronics.

Technical Data

8402	-	6001	6002	6005	6010	6020	6050	6100	
Measuring range calibrated in N and kN from 0 ...		1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN	
		224.8 lbs	449.6 lbs	1.1 klbs	2.2 klbs	4.5 klbs	11.2 klbs	22.5 klbs	
Accuracy									
Relative non-linearity*		≤ ±0.25 % F.S.					±0.5 % F.S.		
Characteristic curve deviation*		≤ ±0.5 % F.S.					≤ ±1.0 % F.S.		
Relative hysteresis		≤ ±0.5 % F.S.					≤ ±1.0 % F.S.	≤ ±1.5 % F.S.	
Temperature effect on zero output		≤ ±0.5 % F.S./10 K							
Temperature effect on nominal sensitivity		≤ ±0.5 % F.S./10 K							
Electrical values									
Sensitivity nominal		1.7 mV/V			2.7 mV/V	1.7 mV/V	3 mV/V	1.7 mV/V	
Measurement direction		compression direction							
Standardization		option 1.5 mV/V (±0.75 %) realized on board in connection cable, 1.7 m from sensor housing or 0.3 m from cable end							
Bridge resistance		350 Ω nominal (deviations are possible)							
Excitation		max. 5 V DC or AC							
Insulation resistance		10 MΩ							
Environmental conditions									
Nominal temperature range		+15 °C ... +70 °C							
Operating temperature range		-30 °C ... +100 °C							
Mechanical values		6001	6002	6005	6010	6020	6050	6100	
Deflection full scale		< 50 μm							
Maximum operating force		150 % of capacity							
Overload burst		> 250 % of capacity							
Dynamic performance		recommended: 70 %: maximum: 100 % (of capacity)							
Protection class		IP54 acc. to DIN 60529							
Natural frequency	[kHz]	> 20							
Weight without cable	[g]	4		5	7	19	40	260	
Other									
Material		stainless steel 1.4542							
Natural frequency	[kHz]	> 20							
Weight without cable	[g]	4		5	7	19	40	260	

* The data in the area 20 % - 100 % of rated load F

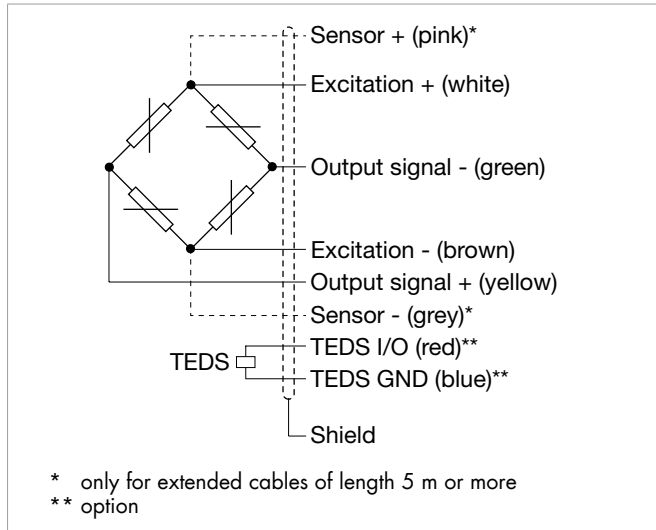
Dimensional drawing **Model 8402**

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Geometry								
Ø D1	[mm]	6.4	6.8	7.7	10.0	14.0	19.7	26.5
Ø D2	[mm]	12.7				15.9	22.4	44.0
H	[mm]	9.6				16.0		38.0
F	[mm]	3.05				6.0		15.0
A	[mm]	14.9				16.5	19.7	35.0
G	[mm]	0.25				0.5		
Ø C	[mm]	1.9				3.0		
Ø K	[mm]	2.8				7.0		
M	[mm]	1.6				3.1		7.5
General tolerance of dimension		ISO 2768-f						

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.



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Measuring range from 0 ...		1 kN	2 kN	5 kN	10 kN	20 kN	50 kN	100 kN	
Electrical termination									
Specifications		4 wire, shielded, TPE coated cable, cable length 1.7 m, drag chain qualified							
Cable fastening		cable cover							
Bending protection		without				bend protection spiral l = 40, Ø d = 2.9 [mm]			
Bending radius	[mm]	≥ 20				≥ 30			

Accessories

Connectors and units

Order Code

Connectors	
9941	Connectors 12 pin, suitable to all burster desktop units
9900-V209	Connectors 9 pin, suitable to SENSORMASTER, DIGIFORCE® and TRANS CAL
9900-V229	Connectors 9 pin with TEDS
9900-V245	Connectors 8 pin, suitable to ForceMaster
Units	
7281-V0001	Mobile measuring device with strain gage simulator and sensor test (R_{ir} , R_{or} , Shunt, R_{ISO})
refer to section 9	Sensor electronics, amplifier and process control units like digital indicator model 9180, model 9163, modular amplifier model 9250 or DIGIFORCE® model 9307

Calibration

Test and calibration certificate	
Supplied with the 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 certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing compression load under the same installation conditions.
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.
German-accredited DAkkS calibration certificate for sensors and measurement chains (DKD)	
Optionally available	Our DAkkS-certified calibration laboratory provides calibration certificates to DIN EN ISO 376. The calibration certificate includes 21 measurement points, starting at zero, spread evenly in 10% steps over the measuring range, for increasing and decreasing compression load under various installation conditions.

NEW
optionally

Dual-range in different spreadings

Dual-range model	
Optionally available	As an optional extra, an additional calibration certificate is available for a second measuring range that is smaller by one step. For example, for the measuring range 0 ... 20 kN also a calibration certificate for 0 ... 10 kN. Depending on the measuring range, this results in a dual range ratio of 1:2 or 1:2.5.
Measuring range	Spreading
0 ... 1 kN	0 ... 500 N (1:2)
0 ... 2 kN	0 ... 1 kN (1:2)
0 ... 5 kN	0 ... 2 kN (1:2.5)
0 ... 10 kN	0 ... 5 kN (1:2)
0 ... 20 kN	0 ... 10 kN (1:2)
0 ... 50 kN	0 ... 20 kN (1:2.5)
0 ... 100 kN	0 ... 50 kN (1:2)

Dual range model

Technical data – changing values for the spreading measuring range	
Temperature effect on zero output	$\leq \pm 0.1 \dots 0.125 \% \text{ F.S./K}$
Sensitivity nominal	0.8 mV/V-1.5 mV/V
Sensitivity tolerance	$\pm 0.75 \%$
Deflection full scale	$< 25 \mu\text{m}$

Order Code

Measuring range	Code				Measuring range
0 ... 1 kN	6	0	0	1	0 ... 224.8 lbs
0 ... 2 kN	6	0	0	2	0 ... 449.6 lbs
0 ... 5 kN	6	0	0	5	0 ... 1.1 klbs
0 ... 10 kN	6	0	1	0	0 ... 2.2 klbs
0 ... 20 kN	6	0	2	0	0 ... 4.5 klbs
0 ... 50 kN	6	0	5	0	0 ... 11.2 klbs
0 ... 100 kN	6	1	0	0	0 ... 22.5 klbs

Delivery ex stock at short notice							
N	0	0	0	S	0	0	0
8	4	0	2	-	-	-	-

■ Nominal sensitivity/not standardized	N
■ Standardization at 1.5 mV/V	S
■ Connection cable 1.7 m (with standardization in the cable 2 m)	0
■ Connection cable 3 m	F
■ Connection cable 5 m	G
■ Connection cable 3 m, extended by a circuit board at 1,7 m *	L
■ Connection cable 5 m extended *	M
* shortened delivery time compared with cable length 3 m and 5 m in one piece	
■ Open cable ends + 6 cm single strands	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
■ Calibration 1:2 / 1:2.5 dual-range option	Z
■ Non-linearity according to specification *	S
* The data in the area 20 % - 100 % of rated load F	
■ Nominal temperature range +15 °C ... +70 °C	0

Note

- Brochure**
 Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It contains numerous applications, detailed product specifications and overviews.
- Product videos**
 Watch our **How-to-do video** at: www.youtube.com/bursterVideo
- CAD data**
 Download via www.burster.com or directly at www.traceparts.com

