

Miniature Load Cell

MODEL 8415



Model 8415 original size

Highlights

- Measuring ranges from 0 ... 200 N up to 0 ... 5000 N, 0 ... 45.0 lbs up to 0 ... 1124.0 lbs
- Smallest dimensions
- Inexpensive
- Made of stainless steel

Options

- burster TEDS
- Vented version for vacuum
- Standardized output signal 1.0 mV/V
- Various cable lengths available

Applications

- Fully automated production centers
- Measuring and controlling equipment
- Precision mechanics
- Tool manufacturing
- Equipment construction

Product description

Due to their small dimensions and sturdy construction, these miniature compression load cells made of stainless steel can be used in a wide range of industrial applications and in laboratories. This compression load cell is easy to handle and its installation is uncomplicated. Its small size makes it perfect for use in very restricted structures for both static and dynamic compression force measurements.

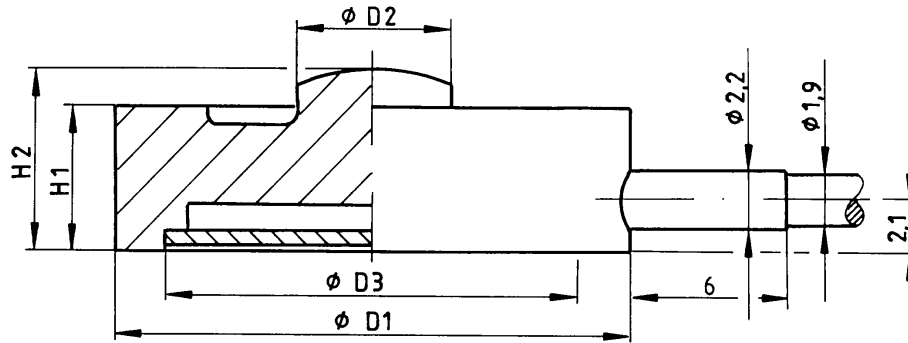
The miniature compression load cell model 8415 is a flat cylindrical disc, the bottom of which is closed with a cover. The load application button for receiving the compression forces is an integrated part of the sensor.

A strain gage full bridge is applied in the gauging member of the measuring element. This produces bridge output voltage directly proportional to the measured force. The small diameter of the sensors results in high rigidity and a short measurement range. The measuring force has to be applied centrally and free from lateral forces. The sensor has to be mounted on a smooth and even surface.

Technical Data

8415	-	5200	5500	6001	6002	6005
Measuring range calibrated in N and kN from 0 ...		200 N	500 N	1000 N	2000 N	5000 N
		45.0 lbs	112.4 lbs	225.0 lbs	450.0 lbs	1124.0 lbs
Accuracy						
Relative non-linearity*		≤ ±0.15 % F.S.				
Characteristic curve deviation*		≤ ±0.5 % F.S.				
Relative hysteresis		≤ ±0.25 % F.S.		≤ ±0.4 % F.S.		≤ ±0.5 % F.S.
Temperature effect on zero output		≤ ±0.3 % F.S./10 K				
Temperature effect on nominal sensitivity		≤ ±0.3 % F.S./10 K				
Electrical value						
Sensitivity nominal		1 mV/V				
Measurement direction		compression direction				
Standardization		option 0.8 mV/V (± 0.5 %) 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		> 30 MΩ at 45 V				
Environmental conditions						
Nominal temperature range		+15 °C ... +70 °C				
Operating temperature range		0 °C ... +80 °C				
Mechanical values						
Deflection full scale		approx. 30 μm				
Maximum static operating force		150 % of capacity				
Overload burst		> 250 % of capacity				
Dynamic performance		recommended: 50 % of capacity possible: 70 % of capacity				
Protection class (EN 60529)		IP54				
Other		5200	5500	6001	6002	6005
Material		stainless steel 1.4542				
Natural frequency	[kHz]	2.0	4.0	6.5	10.5	20.0
Mass without cable	[g]	approx. 20				

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

Dimensional drawing **Model 8415**

8415	-	5200	5500	6001	6002	6005
Measuring range from 0 ...		200 N	500 N	1000 N	2000 N	5000 N
Geometry						
Ø D1	[mm]	20.0				
Ø D2	[mm]	6.0				
Ø D3	[mm]	16.0				
H 1	[mm]	5.5		8.0		
H 2	[mm]	7.0		9.0		
General tolerance of dimension		ISO 2768f				

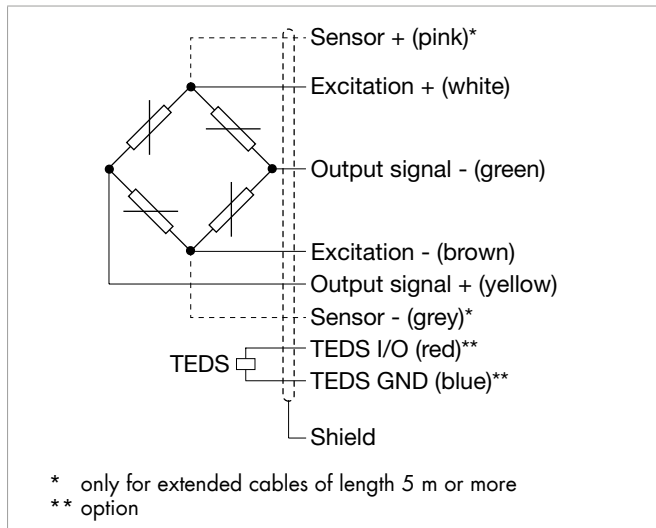
Mounting

Mounting instructions	<p>The measurement force must be introduced centrally and without any lateral forces. To prevent contact at just a few points, ensure that the sensor is installed on a flat surface.</p> <p>The sensor can be secured, for example, with silicon, wax or adhesive cement. Do not subject the sensor to lateral clamping forces as these would lead to measurement errors.</p> <p>When handling and installing the sensor, ensure that the cable outlet and sensor cable are not subject to excessively high tensile or lateral forces. Strain relief may be necessary.</p>
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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 ...		200 N	500 N	1000 N	2000 N	5000 N
Electrical termination						
Specifications		4 wire, shielded, TPE coated cable, cable length 1.7 m, drag chain qualified with standardization in cable 2.0 m				
Cable fastening		cable cover, crimped				
Bending protection		without				
Bending radius		≥ 20 mm				

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	
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 certificate includes 11 measurement points, starting at zero, spread evenly in 20% steps over the full measuring range, for increasing and decreasing 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 load under various installation conditions. DAkkS calibrations can be performed in the compression and/or tension direction depending on the sensor type.



Order Code

Measuring range	Code				Measuring range
0 ... 200 N	5	2	0	0	0 ... 45.0 lbs
0 ... 500 N	5	5	0	0	0 ... 112.4 lbs
0 ... 1000 N	6	0	0	1	0 ... 225.0 lbs
0 ... 2000 N	6	0	0	2	0 ... 450.0 lbs
0 ... 5000 N	6	0	0	5	0 ... 1124.0 lbs

										Delivery ex stock at short notice									
										N	0	0	0	S	0	0	0	0	
8	4	1	5	-						-				0	S	0	0	0	
■ Nominal sensitivity/not standardized										N									
■ Standardization at 0.8 mV/V										B									
■ 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									
■ Relative non-linearity 0.15 % F.S. *														S					
* The data in the area 20 % - 100 % of rated load F																			
■ Nominal temperature range +15 °C ... +70 °C																		0	

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