

Precision Miniature Tension and Compression Load Cell

MODEL 8431, MODEL 8432 with overload protection



Highlights

- Measuring ranges from 0 ... 2.5 N up to 0 ... 100 kN
- Protection class IP65
- Very robust against lateral forces due to supporting membranes
- Relative non-linearity from 0.15 % F.S.
- Model 8432 with overload protection for directions tension and compression

Options

- Compensated temperature range from -55 °C ... +120 °C
- Vacuum compatible design
- Various attachments available
- Dragchain cable

Applications

- Machinery manufacture
- Tool manufacturing
- Handling gear
- Bar works

Product description

These models are among our most precise and yet mechanically robust miniature load cells. High accuracy, finely graded measuring ranges, small dimensions and the simple introduction of force via opposing threaded pins open up a wide scope of laboratory and production applications. Their sophisticated engineering with integrated support membranes and overload protection reduces additional design expense in many applications, e.g. for external overload protection or guiding the parts introducing force to the cell. The result is that less space is required, less material is used and less weight is involved. Last but not least, there is hardly any friction on components that could falsify the measurement result.

The force to be measured is introduced centrally and axially to the cylindrical sensor body in the tension or compression direction by means of the two threaded pins. This requires the sensor to be mounted without any elements touching the end faces of the sensor housing. Two stabilizing support membranes inside the sensors for the smaller measurement ranges minimize the effect of lateral forces and moments, while also ensuring long-term mechanical measuring stability. Even though the precision miniature load cell is designed to isolate the measuring element from external forces, torsion and bending moments on the sensor axis should be avoided. The sensors work position independent. They have an active side which acts directly on the measuring element, whereas the passive side is fixed to the housing.



Sensor with rod end bearings



8431 various measuring ranges



8432 various measuring ranges

Technical Data

| 8431 | - | 5 | 5010 | 5020 | 5050 | 5100 | 5200 | 5500 | |
|---|-------|--|-------------------|-----------|-----------|-----------|-----------|------------|--|
| Measuring range calibrated in N and kN from 0 ... | | ±5 N | ±10 N | ±20 N | ±50 N | ±100 N | ±200 N | ±500 N | |
| | | ±1.24 lbs | ±2.24 lbs | ±4.49 lbs | ±11.2 lbs | ±22.5 lbs | ±45.0 lbs | ±112.4 lbs | |
| Accuracy | | | | | | | | | |
| Relative non-linearity* | | ≤ ±0.15 % F.S. | | | | | | | |
| Characteristic curve deviation* | | ≤ ±0.15 % F.S. | | | | | | | |
| Relative hysteresis | | ≤ 0.30 % F.S. | ≤ 0.25 % F.S. | | | | | | |
| Temperature effect on zero output | | ≤ ±0.05 % F.S./K | ≤ ±0.03 % F.S./K | | | | | | |
| Temperature effect on nominal sensitivity | | ≤ ±0.05 % F.S./K | ≤ ±0.03 % F.S./K | | | | | | |
| Electrical value | | | | | | | | | |
| Sensitivity nominal | | 15 mV/V ... 40 mV/V | 0.4 mV/V | 0.8 mV/V | 2 mV/V | | | | |
| Measurement direction | | 8431-5: Tension and compression direction. Calibration in the preferred direction of tension force. The full-scale output is likely to be different when used in the compression direction. from 8431-5010: Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction. | | | | | | | |
| Standardization | | only for measuring ranges ≥ 0 ... 50 N, to 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end | | | | | | | |
| Bridge resistance | | ca. 500 Ω nominal | ca. 350 Ω nominal | | | | | | |
| Excitation | | recommended 5 V DC | | | | | | | |
| Insulation resistance | | 30 MΩ at 45 V DC | | | | | | | |
| Calibration resistance | | 8431-5: 200 kΩ ±0.1 %; from 8431-5010: 59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol. | | | | | | | |
| Environmental conditions | | | | | | | | | |
| Nominal temperature range** | | +15 °C ... +70 °C | | | | | | | |
| Operating temperature range** | | -55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C) | | | | | | | |
| Mechanical values | | | | | | | | | |
| Deflection full scale | [µm] | 15 ... 40 | | | | | | | |
| Maximum operating force bidirectional | | 150 % of capacity | | | | | | | |
| Overload burst | | 200 % of capacity | | | | | | | |
| Dynamic performance | | recommended: 50 % of capacity maximum: 70 % of capacity | | | | | | | |
| Protection class (EN 60529) | | IP65 | | | | | | | |
| Other | | 5 | 5010 | 5020 | 5050 | 5100 | 5200 | 5500 | |
| Material | | stainless steel 1.4542 | | | | | | | |
| Natural frequency | [kHz] | 0.3 | | 0.7 | 0.9 | 1.2 | 2.7 | 3.3 | |
| Mass without cable | [g] | 18 | | | | 34 | | | |
| Thread adapter *** | | 8431-Zx01 | | | | 8431-Zx02 | | | |

* The data in the area 20 % - 100 %

** Temperature range for the optional TEDS or standardization board 0 ... 60 °C

*** Spare part orders of the thread adapter require the specification of the serial number of the sensor

Technical Data

| 8431 | - | 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 |
| | | ±225.0 lbs | ±450.0 lbs | ±1.1 klbs | ±2.2 klbs | ±4.5 klbs | ±11.2 klbs | ±22.5 klbs |
| Accuracy | | | | | | | | |
| Relative non-linearity* | | ≤ ±0.15 % F.S. | | | | | | |
| Characteristic curve deviation* | | ≤ ±0.15 % F.S. | ≤ ±0.20 % F.S. | | | | | |
| Relative hysteresis | | ≤ 0.25 % F.S. | | | | | | |
| Temperature effect on zero output | | ≤ ±0.03 % F.S./K | | | | | | |
| Temperature effect on nominal sensitivity | | ≤ ±0.03 % F.S./K | | | | | | |
| Electrical value | | | | | | | | |
| Sensitivity nominal | | 2 mV/V | | | | | | |
| Measurement direction | | Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction. | | | | | | |
| Standardization | | to 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end | | | | | | |
| Bridge resistance | | ca. 350 Ω nominal | | | | | | |
| Excitation | | recommended 5 V DC | | | | | | |
| Insulation resistance | | 30 MΩ at 45 V DC | | | | | | |
| Calibration resistance | | 59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol. | | | | | | |
| Environmental conditions | | | | | | | | |
| Nominal temperature range** | | +15 °C ... +70 °C | | | | | | |
| Operating temperature range** | | -55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C) | | | | | | |
| Mechanical values | | | | | | | | |
| Deflection full scale | [µm] | 15 ... 40 | | | | | | |
| Maximum operating force bidirectional | | 150 % of capacity | | | | | | |
| Overload burst | | 200 % of capacity | | | | | | |
| Dynamic performance | | recommended: 50 % of capacity maximum: 70 % of capacity | | | | | | |
| Protection class (EN 60529) | | IP65 | | | | | | |
| Other | | 6001 | 6002 | 6005 | 6010 | 6020 | 6050 | 6100 |
| Material | | stainless steel 1.4542 | | | | | | |
| Natural frequency | [kHz] | 5.3 | 7.5 | 9.7 | 1.3 | 1.0 | | 0.5 |
| Mass without cable | [g] | | 40 | | 60 | 124 | 238 | 1124 |
| Thread adapter *** | | - | | | | | | |

* The data in the area 20 % - 100 %

** Temperature range for the optional TEDS or standardization board 0 ... 60 °C

*** Spare part orders of the thread adapter require the specification of the serial number of the sensor

Technical Data

| 8432 | - | 2.5 | 5005 | 5010 | 5020 | 5050 |
|---|-------|--|-------------------|------------------|-----------|-----------|
| Measuring range calibrated in N and kN from 0 ... | | ±2.5 N | ±5 N | ±10 N | ±20 N | ±50 N |
| | | ±0.56 lbs | ±1.24 lbs | ±2.24 lbs | ±4.49 lbs | ±11.2 lbs |
| Accuracy | | | | | | |
| Relative non-linearity* | | ≤ ±0.20 % F.S. | | | | |
| Characteristic curve deviation* | | ≤ ±0.20 % F.S. | | | | |
| Relative hysteresis | | ≤ 0.25 % F.S. | | | | |
| Temperature effect on zero output | | ≤ ±0.05 % F.S./K | ≤ ±0.03 % F.S./K | | | |
| Temperature effect on nominal sensitivity | | ≤ ±0.05 % F.S./K | ≤ ±0.03 % F.S./K | | | |
| Electrical value | | | | | | |
| Sensitivity nominal | | 1.5 mV/V nominal | 0.75 mV/V nominal | 1.5 mV/V nominal | 2 mV/V | |
| Measurement direction | | 8432-2.5: Tension and compression direction. Calibration in the preferred direction of tension force. The full-scale output is likely to be different when used in the compression direction. from 8432-5005: Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction. | | | | |
| Standardization | | only for measuring ranges ≥ 0 ... 20 N, auf 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end | | | | |
| Bridge resistance | | ca. 500 Ω nominal | ca. 350 Ω nominal | | | |
| Excitation | | recommended 5 V DC | | | | |
| Insulation resistance | | 30 MΩ at 45 V DC | | | | |
| Calibration resistance | | 8432-2.5: 200 kΩ ±0.1 %; from 8432-5005: 59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol. | | | | |
| Environmental conditions | | | | | | |
| Nominal temperature range** | | +15 °C ... +70 °C | | | | |
| Operating temperature range** | | -55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C) | | | | |
| Mechanical values | | | | | | |
| Deflection full scale | [µm] | 15 ... 40 | | | | |
| Maximum operating force bidirectional | | 100 % of capacity (then overload protection takes effect) | | | | |
| Maximum static load to overload stop | | bidirectional 500 % of capacity | | | | |
| Dynamic performance | | recommended: 50 % of capacity maximum: 70 % of capacity | | | | |
| Protection class (EN 60529) | | IP65 | | | | |
| Other | | 2.5 | 5005 | 5010 | 5020 | 5050 |
| Material | | stainless steel 1.4542 | | | | |
| Natural frequency | [kHz] | 0.2 | | 0.35 | | 0.6 |
| Mass without cable | [g] | 68 | | | | |
| Thread adapter *** | | 8432-Zx01 | | | | |

* The data in the area 20 % - 100 %

** Temperature range for the optional TEDS or standardization board 0 ... 60 °C

*** Spare part orders of the thread adapter require the specification of the serial number of the sensor

Technical Data

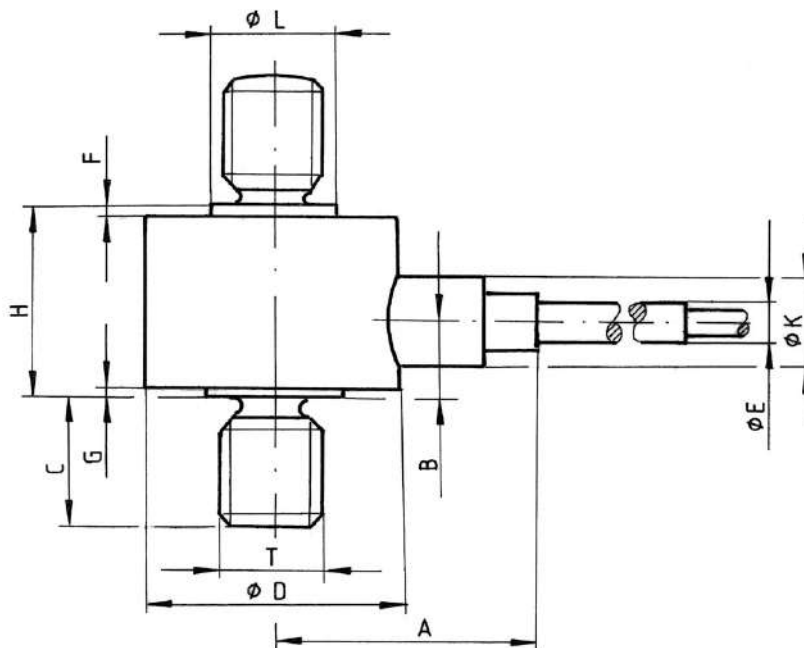
| 8432 | - | 5100 | 5200 | 5500 | 6001 | 6002 |
|---|-------|---|-----------|------------|---------------------------------|---------------------------------|
| Measuring range calibrated in N and kN from 0 ... | | ±100 N | ±200 N | ±500 N | ±1 kN | ±2 kN |
| | | ±22.5 lbs | ±45.0 lbs | ±112.4 lbs | ±225.0 lbs | ±450.0 lbs |
| Accuracy | | | | | | |
| Relative non-linearity* | | ≤ ±0.20 % F.S. | | | | |
| Characteristic curve deviation* | | ≤ ±0.20 % F.S. | | | | ≤ ±0.30 % F.S. |
| Relative hysteresis | | ≤ 0.25 % F.S. | | | | |
| Temperature effect on zero output | | ≤ ±0.03 % F.S./K | | | | |
| Temperature effect on nominal sensitivity | | ≤ ±0.03 % F.S./K | | | | |
| Electrical value | | | | | | |
| Kennwert nominell | | 2 mV/V | | | | |
| Messrichtung | | Tension and compression direction. Calibration in the preferred direction of compression force. The full-scale output is likely to be different when used in the tension direction. | | | | |
| Standardisierung | | to 1.5 mV/V (±0.25 %), option realized on an circuit board 48 x 7 mm (L x W) at the cable after 1.7 m from sensor or 0.3 m from cable end | | | | |
| Brückenwiderstand | | ca. 350 Ω nominal | | | | |
| Speisespannung | | recommended 5 V DC | | | | |
| Isolationswiderstand | | 30 MΩ at 45 V DC | | | | |
| Kalibrierwiderstand | | 59 kΩ ±0.1 % The bridge output voltage caused by a shunt of this value is given in the calibration protocol. | | | | |
| Environmental conditions | | | | | | |
| Nominal temperature range** | | +15 °C ... +70 °C | | | | |
| Operating temperature range** | | -55 °C ... +120 °C (optional cable with drag chain capability -30 °C ... +100 °C) | | | | |
| Mechanical values | | | | | | |
| Deflection full scale | [µm] | 15 ... 40 | | | | |
| Maximum operating force bidirectional | | 100 % of capacity (then overload protection takes effect) | | | | |
| Maximum static load to overload stop | | bidirectional 500 % of capacity | | | bidirectional 250 % of capacity | bidirectional 200 % of capacity |
| Dynamic performance | | recommended: 50 % of capacity maximum: 70 % of capacity | | | | |
| Protection class (EN 60529) | | IP65 | | | | |
| Other | | | | | | |
| Material | | 5100 5200 5500 6001 6002 stainless steel 1.4542 | | | | |
| Natural frequency | [kHz] | 1.2 | 2.7 | 3.3 | 3.4 | 3.8 |
| Mass without cable | [g] | 68 | | | 125 | 210 |
| Thread adapter *** | | 8432-Zx02 | | | 8432-Zx03 | 8432-Zx04 |

* The data in the area 20 % - 100 %

** Temperature range for the optional TEDS or standardization board 0 ... 60 °C

*** Spare part orders of the thread adapter require the specification of the serial number of the sensor

Dimensional drawing **Model 8431** and **Model 8432**



| 8431 | - | 5 | 5010 | 5020 | 5050 | 5100 | 5200 | 5500 |
|-----------------------------------|------|-----------|-------|-------|-------|---------|--------|--------|
| Measuring range from 0 ... | | ±5 N | ±10 N | ±20 N | ±50 N | ±100 N | ±200 N | ±500 N |
| Geometry | | | | | | | | |
| Ø D | [mm] | 25.4 | 19 | | | 25.4 | | |
| H | [mm] | 12.7 | | | 16.0 | | | |
| Thread T | | M4 x 0.7 | | | | M5 x 08 | | |
| C | [mm] | 6.4 | | | | | | |
| A | [mm] | 17.6 | | | | 25.4 | | |
| F | [mm] | 2.8 | 1.3 | | | 2.8 | | |
| G | [mm] | 0.8 | 0.3 | | | 0.2 | | |
| B | [mm] | 5.9 | | | | 6.6 | | |
| Ø K | [mm] | 4.8 | | | 6.4 | | | |
| Ø L | [mm] | 9.6 | 7.9 | | | 9.5 | | |
| Ø E | [mm] | - | 2.5 | | | 3.6 | | |
| General tolerance of dimensioning | | ISO 2768f | | | | | | |

| 8431 | - | 6001 | 6002 | 6005 | 6010 | 6020 | 6050 | 6100 |
|-----------------------------------|------|-----------|-------|-------|-----------|-----------|-----------|-----------|
| Measuring range from 0 ... | | ±1 kN | ±2 kN | ±5 kN | ±10 kN | ±20 kN | ±50 kN | ±100 kN |
| Geometry | | | | | | | | |
| Ø D | [mm] | 25.4 | | | | 31.8 | 35 | 60 |
| H | [mm] | 14 | | | 19.1 | 25.4 | 28.7 | 48 |
| Thread T | | M6 x 1.0 | | | M10 x 1.5 | M12 x 1.5 | M20 x 1.5 | M30 x 2.0 |
| C | [mm] | 9.7 | | | 12.7 | 16 | 22.4 | 42 |
| A | [mm] | 25.4 | | | | 28.6 | 30.3 | 45 |
| F | [mm] | 0.8 | | | | 0.3 | 0.5 | |
| G | [mm] | 0.5 | | | - | | | |
| B | [mm] | 7 | | | 6.5 | 14.2 | 15 | 23.6 |
| Ø K | [mm] | 6.4 | | | 9.5 | | 13 | |
| Ø L | [mm] | 8.7 | | | 12.7 | 17.5 | 25 | 38 |
| Ø E | [mm] | 3.6 | | | | - | | |
| General tolerance of dimensioning | | ISO 2768f | | | | | | |

| 8432 | - | 2.5 | 5005 | 5010 | 5020 | 5050 | 5100 | 5200 | 5500 | 6001 | 6002 |
|-----------------------------------|------|-----------|------|-------|-------|---------|--------|--------|--------|----------|-------|
| Measuring range from 0 ... | | ±2.5 N | ±5 N | ±10 N | ±20 N | ±50 N | ±100 N | ±200 N | ±500 N | ±1 kN | ±2 kN |
| Geometry | | | | | | | | | | | |
| ∅ D | [mm] | 25.4 | | | | | | 31.8 | | 38.1 | |
| H | [mm] | 21.9 | | | | | | 23.9 | | 26.7 | |
| Thread T | | M4 x 0.7 | | | | M5 x 08 | | | | M6 x 1.0 | |
| C | [mm] | 6.4 | | | | | | 8 | | 9.6 | |
| A | [mm] | 25.4 | | | | | | 28.6 | | 31.8 | |
| F | [mm] | 2.8 | | | | | | 2.6 | | 0.7 | |
| G | [mm] | 0.2 | | | | | | 0.3 | | | |
| B | [mm] | 9.6 | | | | | | 10.7 | | 14.9 | |
| ∅ K | [mm] | 9.7 | 9.5 | | | 6.4 | | | 9.5 | | |
| ∅ L | [mm] | 9.5 | | | | | | 9.0 | | | |
| ∅ E | [mm] | - | 2.5 | | | 3.6 | | | | | |
| General tolerance of dimensioning | | ISO 2768f | | | | | | | | | |

Permissible External Forces

Due to this precision miniature load cells construction with two stabilizing support membranes, it is only slightly sensitive to non-central forces applied to the sensor

The influence of these undesired external forces cannot be globally quantified with certainty. It depends on the sensor's measuring range and from which side the force is applied. As a rule of thumb, the amount of external force influence on the measurement signal is between 0.25 % and 1 % depending on the measurement range as long as it is within the range of the table.

The table shows the maximum percentage values that the external forces can have in relation to the respective measurement range of the load cell. The total of all loads on the load cell (forces and torques) should not exceed 100% of the measurement range

The torque entries refer to a gap of 25 mm from the point of force application to the sensor surface or the sensor axis.

| End Value of Meas. Range up to | Shear Force (Lateral Force) [% F.S.] | Bending Torque (Bending Force) [% F.S.] | Torsion (Torque) [% F.S.] |
|--------------------------------|--------------------------------------|---|---------------------------|
| 0 ... 2 kN | 50 | 40 | 25 |
| 0 ... 10 kN | 30 | 25 | 25 |
| 0 ... 100 kN | 20 | 20 | 10 |

Mounting

| | |
|-----------------------|---|
| Mounting instructions | <p>The force being measured has to be applied centrally and without lateral forces, via the threaded pin. There must not be any lateral clamping forces acting on the sensor as they could cause incorrect measurements or damage the unit.</p> <p>To ensure that the load cell is securely fixed in its installation position, it can be glued in place via the thread or secured with a locknut.</p> <p>During handling and installation, take care not to subject the cable outlet or sensor connection cable to excessive tensile or bending force. Effective strain relief should be installed if necessary.</p> |
|-----------------------|---|

Electrical termination

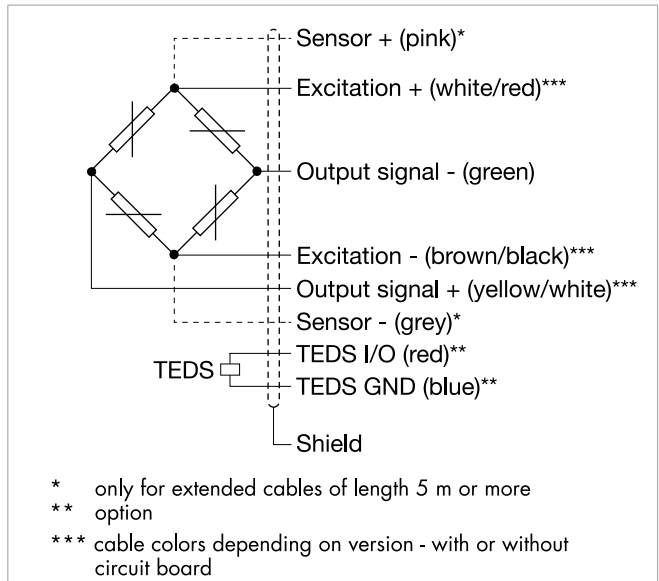
Output signal

burster load cells are based on a strain-gage Wheatstone bridge. This measurement principle means that the output voltage mV/V is 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.



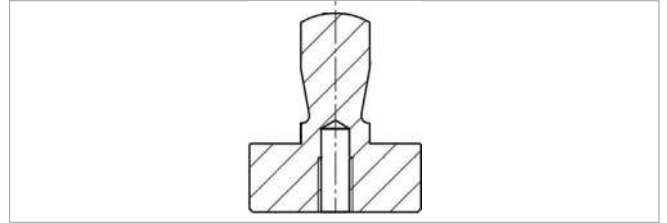
| 8431/8432 | - | 2.5 | 5005 | 5010 | 5020 | 5050 | 5100 | 5200 | 5500 | |
|-------------------------------|---|--|---|-------|-------|-------|-------------------------------------|--------|--------|--|
| Measuring range from 0 ... | | ±2.5 N | ±5 N | ±10 N | ±20 N | ±50 N | ±100 N | ±200 N | ±500 N | |
| Electrical termination | | | | | | | | | | |
| Specifications | | shielded, PTFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, not drag chain suitable | | | | | | | | |
| | | - | Optional: shielded, TFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, drag chain suitable | | | | | | | |
| Cable fastening | | cable cover | | | | | | | | |
| Bending protection | | without | | | | | anti-kink protection | | | |
| Bending radius | | ≥ 6 mm rigidly laid; ≥ 20 mm moving; | | | | | ≥ 8 mm rigidly laid; ≥ 30 mm moving | | | |
| Cable model | | PTFE 1.9 mm, TPE 1.8-2.0 diameter | | | | | | | | |

| 8431/8432 | - | 6001 | 6002 | 6005 | 6010 | 6020 | 6050 | 6100 | |
|-------------------------------|---|---|-------|-------|--------|--------|--------|---------|-------------------------------------|
| Measuring range from 0 ... | | ±1 kN | ±2 kN | ±5 kN | ±10 kN | ±20 kN | ±50 kN | ±100 kN | |
| Electrical termination | | | | | | | | | |
| Specifications | | shielded, PTFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, not drag chain suitable | | | | | | | |
| | | Optional: shielded, TFE coated, 4 wire cable with bare ends for soldering, cable length 1.7 m, with standardization in cable 2.0 m, drag chain suitable | | | | | | | |
| Cable fastening | | cable cover | | | | | | | PG screwing mini M8 |
| Bending protection | | anti-kink protection | | | | | | | without |
| Bending radius | | ≥ 8 mm rigidly laid; ≥ 30 mm moving | | | | | | | ≥ 6 mm rigidly laid; ≥ 20 mm moving |
| Cable model | | PTFE 1.9 mm, TPE 1.8-2.0 diameter | | | | | | | PTFE 2.2 mm |

Accessories

Adapter

If a sensor of the model 8431 or 8432 should be mounted on a plunger of a press, a centering and mounting adapter with a 10 H7 mounting hole is available.

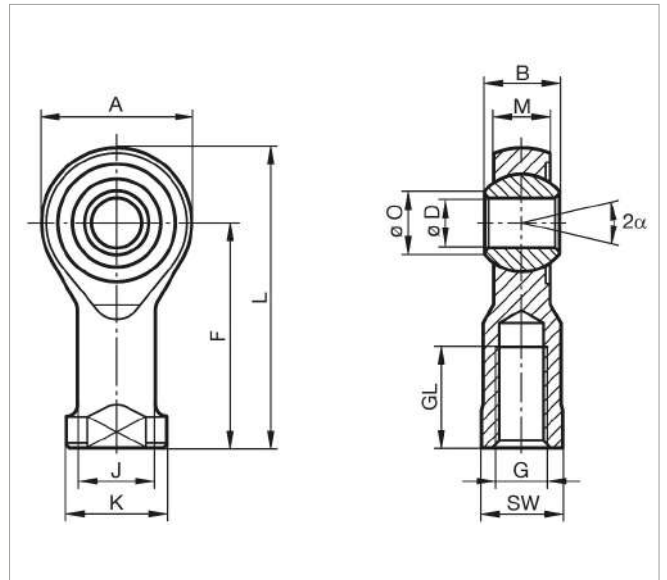


Order code

| Article number | 5501-Z014 | | | | | 5501-Z01 | | | |
|---|-----------|------|-------|-------|-------|----------|--------|--------|--|
| Compatible for measuring range from 0 ... | ±2.5 N | ±5 N | ±10 N | ±20 N | ±50 N | ±100 N | ±200 N | ±500 N | |
| Centering and mounting adapter with internal thread | M4 x 0.7 | | | | | M5 x 08 | | | |

Rod end bearings

- Optimal force introduction
- Compensation of misalignments
- Very high dynamic und static load capacity
- Material: stainless steel
- Temperature range: - 45 °C to + 120 °C
- PTFE insert, maintenance-free
- DIN 648 series K
- Bore holes H7, recommended connection pin: g6
- Inner ring not suitable for permanent rotary operation



Order code

| 8591 | - | Z04F | Z05F | Z06F | Z10F | Z12F |
|---|------|----------------|-----------------|---------------|-----------|-----------|
| Compatible for measuring range from 0 ... | | 2.5 N ... 50 N | 100 N ... 500 N | 1 kN ... 5 kN | 10 kN | 20 kN |
| Geometry | | | | | | |
| G | [mm] | M4 x 0.7 | M5 x 08 | M6 x 1.0 | M10 x 1.5 | M12 x 1.5 |
| Ø D | [mm] | 4 | 5 | 6 | 10 | 12 |
| B | [mm] | 7 | 8 | 9 | 14 | 16 |
| M | [mm] | 5.25 | 6 | 6.75 | 10.5 | 12 |
| A | [mm] | 16 | 18 | 20 | 29 | 32 |
| F | [mm] | 24 | 27 | 30 | 43 | 50 |
| L | [mm] | 31 | 36 | 40 | 57.5 | 66 |
| K | [mm] | 9.5 | 11 | 13 | 17 | 19 |
| J | [mm] | 7.8 | 9 | 10 | 15 | 17.5 |
| Ø O | [mm] | 6.5 | 7.7 | 8.9 | 12.9 | 15.4 |
| SW | [mm] | 8 | 9 | 11 | 19 | 19 |
| GL | [mm] | 10 | 10 | 12 | 20 | 22 |
| α | [°] | | | 13 | | |
| Other | | | | | | |
| Stat. load factor | [kN] | 4 | 11.8 | 16.7 | 28.3 | 34.5 |
| Dyn. load factor | [kN] | 2.3 | 7.5 | 9.3 | 23.4 | 32 |
| Weight | [g] | 11 | 18 | 27 | 76 | 115 |

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_{1r} , R_{0r} , 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® |

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 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 load cells of product group 8431/8432 for measuring ranges $\geq 0 \dots 20 \text{ N}$

| | |
|----------------------|--|
| Optionally available | Calibration certificate with accreditation symbol for load cells of product group 8431/8432. 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. |
|----------------------|--|

Note

- **Brochure**
Our brochure „Load cells for production, automation, R&D and quality assurance“ is available for download on our website. It conatains 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



Order Code

| Measuring range | Code | Measuring range |
|------------------|---------|------------------|
| 0 ... ±5 N* | 5 0 0 5 | 0 ... ±1.24 lbs |
| 0 ... ±10 N*/** | 5 0 1 0 | 0 ... ±2.24 lbs |
| 0 ... ±20 N*/** | 5 0 2 0 | 0 ... ±4.49 lbs |
| 0 ... ±50 N*/** | 5 0 5 0 | 0 ... ±11.2 lbs |
| 0 ... ±100 N*/** | 5 1 0 0 | 0 ... ±22.5 lbs |
| 0 ... ±200 N*/** | 5 2 0 0 | 0 ... ±45.0 lbs |
| 0 ... ±500 N*/** | 5 5 0 0 | 0 ... ±112.4 lbs |
| 0 ... ±1 kN*/** | 6 0 0 1 | 0 ... ±225.0 lbs |
| 0 ... ±2 kN*/** | 6 0 0 2 | 0 ... ±450.0 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 |

* 8432 / ** 8431

| | | | | | | | | | | Delivery ex stock at short notice | | | | | | | | | | |
|--|----------|----------|----------|---|--|--|--|--|--|-----------------------------------|---|---|---|----------|----------|---|---|--|---|---|
| | | | | | | | | | | N | 0 | 0 | 0 | S | 0 | 0 | 0 | | | |
| 8 | 4 | 3 | 1 | - | | | | | | | | | | | | | | | | |
| 8 | 4 | 3 | 2 | - | | | | | | | | | | S | 0 | | | | | |
| ■ Nominal sensitivity/not standardized | | | | | | | | | | N | | | | | | | | | | |
| ■ Standardization of sensitivity at 1.5 mV/V 8431 only for measuring ranges ≥ 0 ... 50 N 8432 only for measuring ranges ≥ 0 ... 20 N | | | | | | | | | | E | | | | | | | | | | |
| ■ 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 * | | | | | | | | | | 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 | | | | | | | | | | |
| ■ 8 pins coupling connector model 9900-V245 for 9110 | | | | | | | | | | H | | | | | | | | | | |
| ■ Calibration and positive output signal for compression load | | | | | | | | | | 0 | | | | | | | | | | |
| ■ Calibration and positive output signal for tension load | | | | | | | | | | E | | | | | | | | | | |
| ■ Non-linearity according to specification | | | | | | | | | | S | | | | | | | | | | |
| ■ Standard version | | | | | | | | | | | | | | | | | | | 0 | |
| ■ Vacuum compatible (IP protection class low) | | | | | | | | | | | | | | | | | | | 1 | |
| ■ Vibration protection | | | | | | | | | | | | | | | | | | | 3 | |
| ■ Drag chain cable * | | | | | | | | | | | | | | | | | | | 4 | |
| ■ Extended nominal temperature range -40 °C ... +90 °C | | | | | | | | | | | | | | | | | | | | A |
| ■ Extended nominal temperature range -55 °C ... +120 °C | | | | | | | | | | | | | | | | | | | | B |
| ■ Extended nominal temperature range +20 °C ... +120 °C | | | | | | | | | | | | | | | | | | | | C |

Other special designs, such as higher temperature ranges or underwater cables on request.

* Options: Extended nominal temperature range not possible

Order Code

| Measuring range | Code | Measuring range |
|---------------------------|------|-----------------|
| 0 ... ±2.5 N (only 8432)* | 2.5 | 0 ... ±1.22 lbs |
| 0 ... ±5 N (only 8431)* | 5 | 0 ... ±2.24 lbs |

* only available with nominal sensitivity, 1.7 m connection cable length, various plugs without further options

| | | | | |
|----------|----------|----------|----------|----------|
| 8 | 4 | 3 | 1 | - |
| 8 | 4 | 3 | 2 | |