

Tension/compression force transducer S-type with adjustable measuring range

with thin film sensor

Accuracy: 0.2 %
Output signals: 4...20 mA; 2-wire system,
0...10 VDC; 3-wire system



Description

The S-type from tectsis has a unique set of features. This multi-range force transducer is able to replace three of the conventional type. With the aid of the PE01 hand programming unit, it is possible to reduce the measuring range from 100% to 50% and 30%. Built-in overload protection allows up to 2.5-times nominal loading in tension and compression directions.

The proven tectsis thin-film sensors are implanted in this type of force transducer too. The sensor, which is welded in via laser, has all advantages of the conventional bonded foil strain gauges, but without having their substantial disadvantages (temperature drifts of the glue and creeping).

S-type force transducers are often used directly in the flow of force. For example, they are used to determine weight or measure overload. They are used in machinery to determine pressing, closing and assembling forces. Fitted indirectly, they are also used as torque arms for monitoring torque.

Ordering code

| F _{nom} [kN] | Output signal | |
|---|---------------|--------------|
| | 4...20 mA | 0..10 V |
| | Order No. | Order No. |
| 2 | 3555.202.001 | 3555.202.101 |
| 3 | 3555.302.001 | 3555.302.101 |
| 5 | 3555.502.001 | 3555.502.101 |
| 10 | 3555.103.001 | 3555.103.101 |
| 20 | 3555.203.001 | 3555.203.101 |
| 30 | 3555.303.001 | 3555.303.101 |
| 50 | 3555.503.001 | 3555.503.101 |
| Other nominal loads and geometries on request | | |

Features

- Adjustable measuring range
- Integrated overload protection for tension & compression direction
- Thin film implants (instead of conventional bonded foil strain gauges)
- Corrosion free stainless steel
- Integrated amplifier
- Small temperature drift
- High long term stability
- High shock and vibration resistance
- For dynamic or static measurements
- Good repeatability
- Easy assembly

Measuring ranges

Tension/compression forces from (0.75 kN) 2 kN to 50 kN

Areas of use

- Hoisting gear
- Engagement forces in machinery
- Automated manufacturing
- Construction of plant and machinery

Special note

- All variants include lock nuts

Model: 3555

Technical data

| | |
|---|--|
| Model | 3555 |
| Nominal force F_{nom} | 2 / 3 / 5 / 10 / 20 / 30 / 50 kN (Switchable measuring range, see table) |
| Accuracy | < 0.2% C_n |
| Limiting force | 250% F_{nom} |
| Breaking strength | > 600% F_{nom} |
| Composite error | $\leq \pm 0.2\%$ of FS |
| Relative reversal span (hysteresis) | $< \pm 0.1\%$ of FS C_n |
| Permissible oscillation width | $\pm 50\%$ F_{nom} accord. to DIN 50100 |
| Creep, 30 min. at F_{nom} | $\leq \pm 0.1\%$ of FS C_n |
| Nominal measuring distance | < 0.5 mm |
| Nominal temperature range | -20 ... +80°C |
| Working temperature range | -40 ... +80°C |
| Storage temperature range | -40 ... +85°C |
| Temperature sensitivity - characteristic - zero signal | $\leq \pm 0.2\%$ of FS /10K $\leq \pm 0.2\%$ of FS /10K |
| Vibration immunity | 20g, 100h, 50...150Hz accord. to DIN EN 60068-2-6 |
| Degree of protection (accord. to EN 60 529 / IEC 529) | IP 67 |
| Emitted interference | To EN 61326 |
| Interference immunity | To EN 61326 |
| Insulation resistance | > 5 G Ω / 50V |
| Types of electrical protection | Reversed polarity, overvoltage and short-circuit protection |
| Analogue output | |
| - Output signal (span of output signal: C_n) | 4 ... 20 mA – 2-wire system; 0 ... 10V – 3-wire system |
| - Current consumption | Current output 4 ... 20 mA: signal current ; Voltage output approx. 8 mA |
| - Auxiliary power | 10 ... 30 V DC for current output 14 ... 30 V DC for voltage output |
| - Burden | $\leq (UB-6 V) / 0.024 A$ for current output > 10 k Ω for voltage output |
| - Response time | ≤ 1 ms (within 10% to 90% F_{nom}) Round connector M 12x1, 4-pole |
| Material of measuring body | Stainless steel |

Measuring element of stainless steel 1.4542

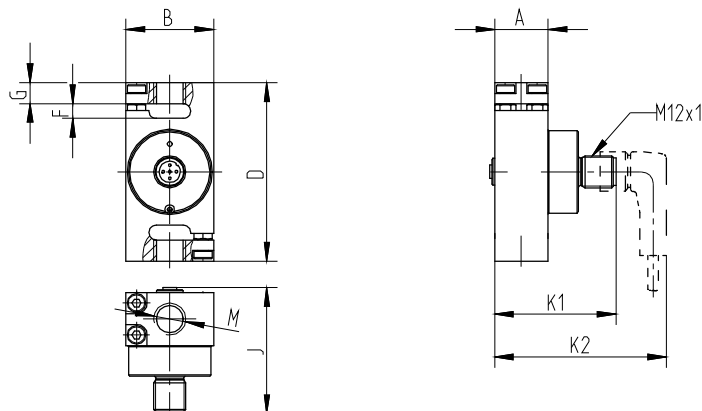
FS = measuring range full-scale value

Measuring range switching

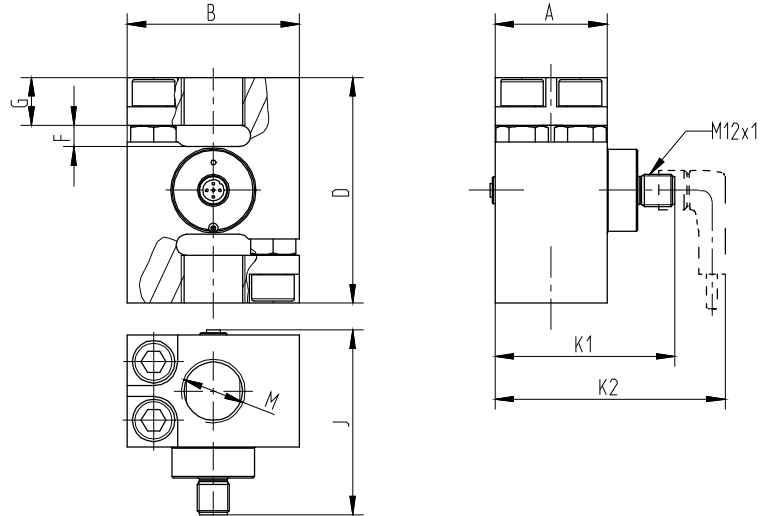
| Nom. load | Switchable to | |
|--------------|---------------|---------|
| 2 kN | 1 kN | 0.75 kN |
| 3 kN | 2 kN | 1 kN |
| 5 kN | 3 kN | 2 kN |
| 10 kN | 5 kN | 3 kN |
| 20 kN | 10 kN | 7.5 kN |
| 30 kN | 20 kN | 10 kN |
| 50 kN | 30 kN | 20 kN |

Dimensions

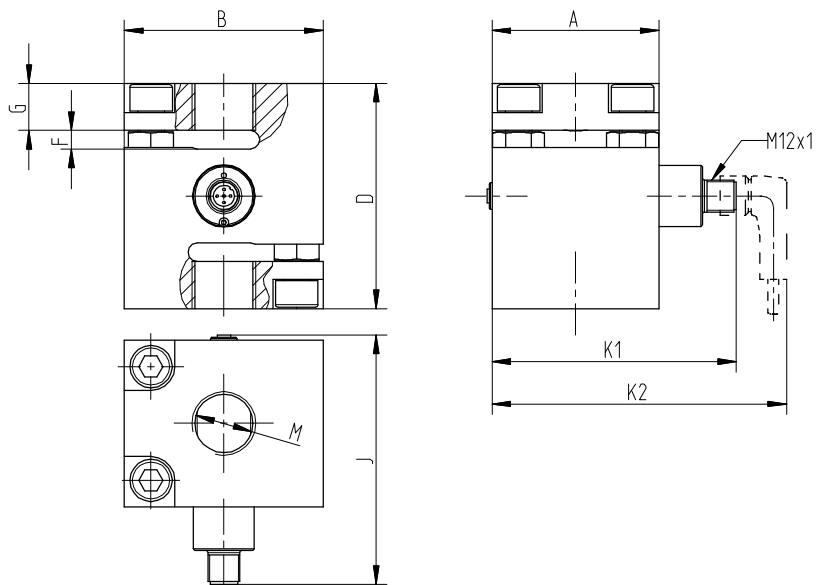
Variant
2 - 5 kN



Variant
10 - 30 kN



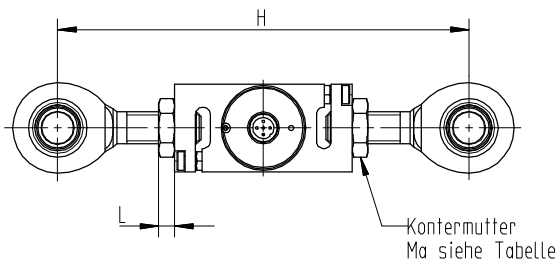
Variant
50 kN



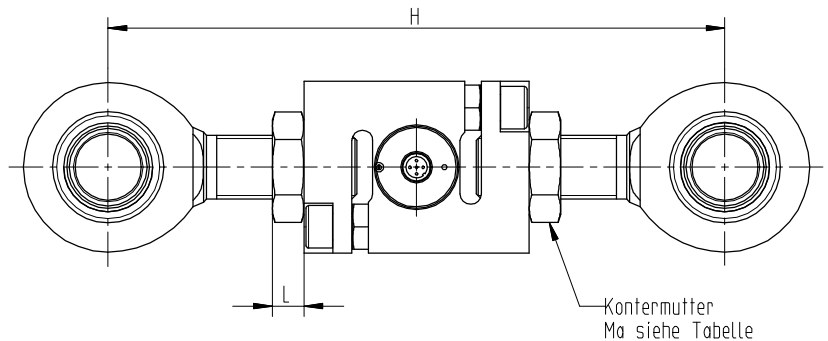
| Nom. force in kN | A | B | D | F | G | H | J | K1 | K2 | L | M | Ma (Nm) |
|------------------|------|----|----|-----|------|-------|------|------|-------|----|-------|---------|
| 2 / 3 / 5 | 20 | 33 | 67 | 5.6 | 7.9 | 155±2 | 47.4 | 45.5 | 64.5 | 6 | M12 | 60 |
| 10 / 20 / 30 | 42.2 | 65 | 85 | 8 | 18 | 233±2 | 69.6 | 67.7 | 86.7 | 12 | M24x2 | 500 |
| 50 | 63 | 75 | 85 | 7 | 17.8 | 233±2 | 94.1 | 92.2 | 111.2 | 12 | M24x2 | 500 |

Fitting dimensions

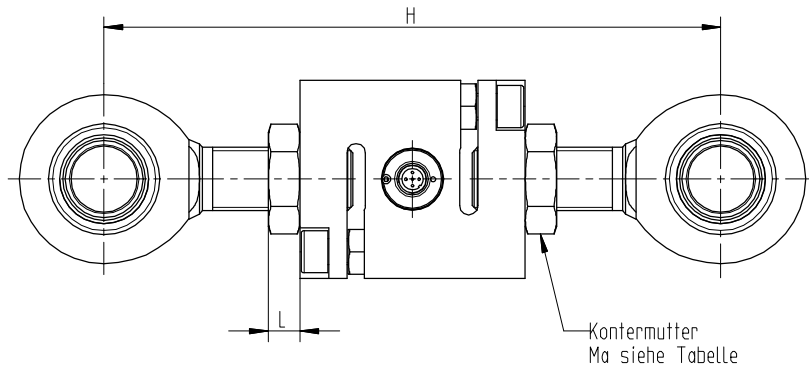
Variant
2 - 5 kN



Variant
10 - 30 kN



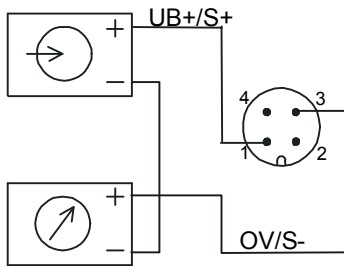
Variant
50 kN



Electrical connection

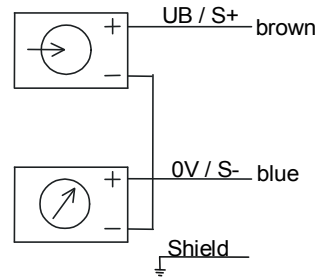
Output 4...20mA (2-wire system)

Round connector M12x1, 4-pole



940E01

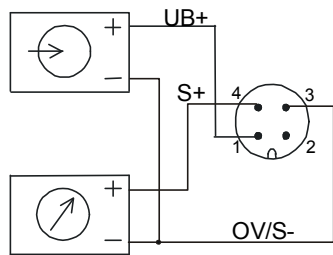
Cable outlet



940E03

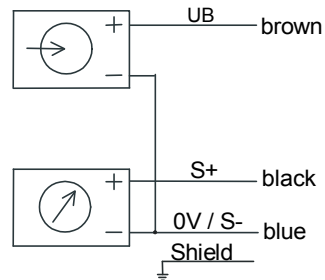
Output 0...10V (3-wire system)

Round connector M12x1, 4-pole



940E04

Cable outlet



940E06

Connector pin assignment M12x1 (4-pole) /

Open cable end of tectis standard connecting cable (STL 288, black)

| Pin | 4...20 mA (2-wire) | 0...10 VDC (3-wire) | Connection identifier |
|-----------|--------------------|---------------------|-----------------------|
| | electr. connection | electr. connection | |
| 1 | UB+/S+ | UB+ | brown |
| 2 | - | - | white |
| 3 | OV/S- | OV/S- | blue |
| 4 | - | S+ | black |
| shielding | thread M12x1 | thread M12x1 | shield |

Subject to change without notice