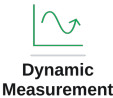


TIE-BAR STRAIN SENSOR

TENSION &
COMPRESSION



- $\pm 1000 \mu\epsilon$
- TIE BARS $\varnothing 25 \dots 400 \text{ mm}$
- IP64 · ANODISED ALUMINIUM



VERSIONS

Feature	Available versions
Bridge	2/4 bridge with two active strain gauges · 4/4 full bridge
Cable length	0.5 m · 3 m · 5 m · 10 m
Connection	cable with open leads · cable with connector

Open leads are available with the 2/4 bridge only. The pair of stainless steel belts goes with the tie bar diameter and is ordered separately – please state the diameter.



OVERVIEW

Clamping force read on the tie bar itself: two stainless steel belts hold the sensor around the bar and press the foil strain gauges, protected under a stainless film, so firmly against the surface that friction takes over the task of the adhesive. The reading is the surface strain, in the same quality as a bonded gauge, and it is available within minutes instead of the better part of an hour. One sensor covers every tie bar from 25 to 400 mm — only the pair of belts changes with the diameter, and it changes every 2.5 mm of it. Mounting is non-destructive: nothing is drilled, welded or glued, and a sensor taken off one machine goes onto the next without being recalibrated. It cannot be overloaded; instead of damage an offset appears, which is why the sensor is reset cyclically. The sensor is passive and works into any strain gauge amplifier — the VDA and DU families are the matching ones. Presses, injection-moulding and die-casting machines are its usual place, in static as in dynamic duty, and a tie bar fitted with one becomes a load cell of its own.

MEASUREMENT

- Direct reading of the surface strain, like a bonded strain gauge
- Measuring range $\pm 1000 \mu\epsilon$
- High accuracy and linearity in tension and compression
- 350Ω foil bridge, GF = 2.0
- Cannot be overloaded — an offset appears instead of damage
- Cyclical reset
- Passive: no amplifier inside · VDA and DU families match
- Static and dynamic applications

MOUNTING AND USE

- Two stainless steel belts, 10 x 0.4 mm — no drilling, welding or glue
- One sensor for tie bars from 25 to 400 mm
- A pair of belts per diameter, tolerance ± 2.5 mm
- Non-destructive, quick and repeatable
- No recalibration between removal and refitting
- Press-on torque 2.0 Nm on the M4 screws, surface N7
- For presses, injection-moulding and die-casting machines
- A fitted tie bar works as a load cell of its own



TECHNICAL DATA

MEASUREMENT

Strain gauge type	foil, GF = 2.0
Measuring range	$\pm 1000 \mu\epsilon$
Reset	the sensor requires a cyclical reset

PRECISION

Sensitivity tolerance	$\pm 0.2 \%$
Transverse sensitivity	$0.9 \pm 0.2 \%$
Accuracy	$< \pm 0.5 \%$ FS
Linearity	$< \pm 0.5 \%$ FS
Hysteresis	$< \pm 0.2 \%$ FS
Repeatability	$< 0.1 \%$ FS
Operating temperature range	$-20^\circ\text{C} \dots +70^\circ\text{C}$
Storage temperature range	$-20^\circ\text{C} \dots +70^\circ\text{C}$

MECHANICAL PROPERTIES

Case material	anodised aluminium
Weight, including cable	200 g

ELECTRICAL PROPERTIES

Bridge resistance	350 Ω
Bridge configuration	2/4 bridge or 4/4 bridge, depending on the version
Supply voltage	5 V DC, max 8 V DC
Supply current	$< 15 \text{ mA}$
Amplifier	none built in — the sensor is passive
Matching amplifiers and monitors	VDA and DU families
Cable	2 x PVC, screened, 2 x 0.14 mm ² , $\varnothing$ 3.5 mm
Connection	6-pole connector, or open leads with the 2/4 bridge · 0.5 / 3 / 5 / 10 m

MOUNTING

Tie bar diameter	25 ... 400 mm
Fixing	a pair of stainless steel belts, 10 x 0.4 mm, per diameter
Diameter tolerance	$\pm 2.5 \text{ mm}$ — outside it, a different pair of belts
Press-on torque	2.0 Nm on the M4 screws
Surface at the installation spot	N7
Refitting	no recalibration between removal and re-installation

MECHANICAL LIMITS

Overload capability	indefinite — an offset may occur
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ELECTRICAL CONNECTION

	2/4 bridge
1	strain gauge 1 · red
2	strain gauge 1 · red
3	not used
4	strain gauge 2 · yellow
5	strain gauge 2 · yellow
6	not used

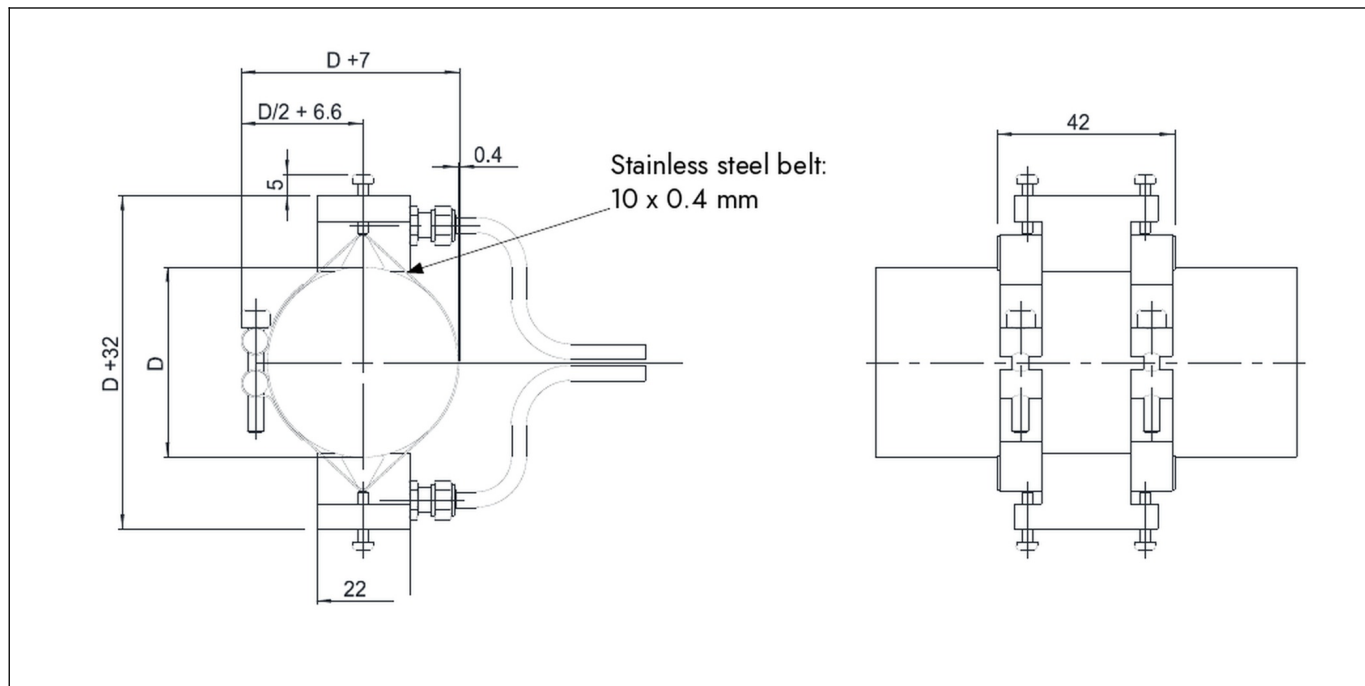
	4/4 bridge
1	excitation +
2	excitation +
3	excitation -
4	signal +
5	signal -
6	excitation -



Pin numbering of the 6-pole connector. With the 2/4 bridge the leads are coloured: red for strain gauge 1, yellow for strain gauge 2.



DIMENSIONS (mm)



D is the tie bar diameter; $D + 7$, $D/2 + 6.6$ and $D + 32$ grow with it. The drawing uses the decimal point.

COMPLIANCE AND CERTIFICATION

Protection Rating IP64

