Baumer
Passion for Sensors

Strain sensors

DST55R

Robust strain sensor for harsh outdoor environment

User benefits

- Reliable long term operation under extreme ambient conditions
- Cost efficient force measurement by using strain
- One sensor for various machine sizes and applications
- Easily implemented into machine design
- Fast and easy mounting

Product highlights

- Highest protection rating IP69K
- Tested long term seal according to proTect+
- Corrosion protection C5-M
- Measuring range from ± 100 to 1000 µm/m
- Integrated amplifier electronics
- Factory strain calibration

Technical data

General data

Nominal strain	▪ 100, 250, 500, 1000 µm/m
Non-linearity	▪ < 0,5 %
Repeatability	▪ < 0,1 %

Electrical data

Current consumption	▪ < 60 mA
Signal polarity positive	▪ tension

Electrical data voltage output version

Output signal	▪ ±10 VDC (max. ±12 VDC)
Cut-off frequency (-3 db)	▪ 1000 Hz
Supply voltage	▪ 18 ... 33 VDC

Electrical data CANopen version

Output signal	▪ CANopen DS404 (SAE J1939 on request)
Supply voltage	▪ 10 ... 33 VDC
Sampling rate	▪ 1000 samples/s
Measuring resolution	▪ 0,1 µε
Data format	▪ fixed-point

Mechanical data

Material	
- Sensor body	▪ 1.7225, chemically nickel plated
- Cover	▪ Stainless steel 1.4301
- Seal	▪ NBR
Electrical connection	▪ 5 pin (M12 x 1)
Sensor stiffness	▪ 80 N @ 100 µm/m ▪ 200 N @ 250 µm/m ▪ 100 N @ 500 µm/m ▪ 200 N @ 1000 µm/m
Weight	▪ 330 g

Environment conditions

Operating temperature	▪ -40 ... +85 °C
Storage temperature	▪ -40 ... +85 °C
Vibration IEC 60068-2-6	▪ 10 - 57 Hz: 1.5 mm p-p ▪ 58 - 2000 Hz 10g
Random IEC 60068-2-64	▪ 20 - 1000 Hz, 0.1 g^2/Hz
Shock IEC 60068-2-27	▪ 50 g / 11 ms, 100 g / 6 ms
Protection class EN 60529	▪ IP 68, 168h @ 1m H_2O ▪ IP 69K, proTect+
Corrosion protection IEC 60068-2-52 salt spray test complies ISO12944-5 protective paint systems	▪ C5-M

Compliance and approvals

EMC	▪ EN 61000-6-2 ▪ EN 61000-6-3 ▪ EN 61326-2-3
UL listed	▪ E217824

Strain sensors

DST55R

Robust strain sensor for harsh outdoor environment

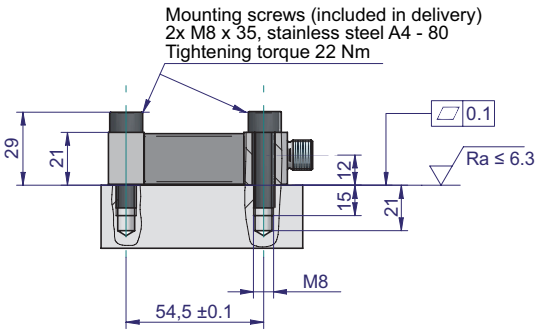
Applications

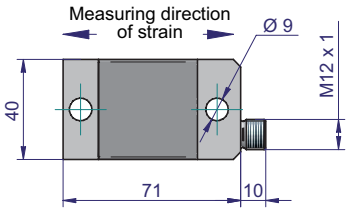
The DST55R strain sensor is used for indirect force measurement in harsh outdoor environments. The sensor is mainly used for load monitoring, weight measurement and vibration damping in industries such as mobile automation, heavy duty vehicles, cranes and wind power stations.

Measuring principle

The mechanical components of machines and apparatus deform when forces act on them. This deformation can be measured with a strain sensor. The acting force on the mechanical structure can be determined based on the measured strain. The relationship between strain and force is given by the design of the mechanical component from which the sensor picks up the strain. The main influencing factors are the cross-sectional area and the E module of the component. The screwed on strain sensor measures smallest changes in strain and converts them into an electrical output signal.

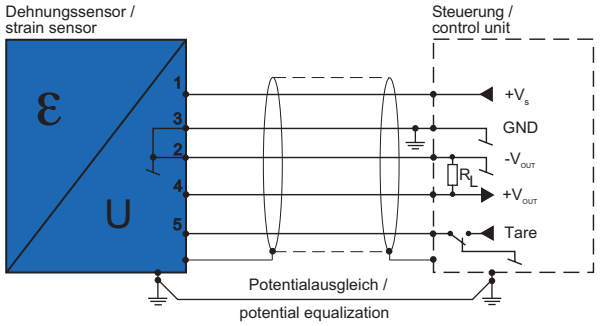
Dimensions





Electrical connection

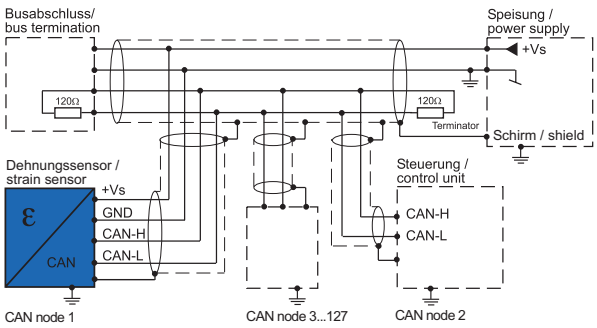
Connection diagram voltage output version



Electrical connection voltage output version

Pin-number	Signals
1	$+V_S$
2	$-V_{OUT}$
3	GND
4	$+V_{OUT}$
5	Tare
CASE	shield

Connection diagram CANopen version



Electrical connection voltage output version

Pin-number	Signals
1	n.c.
2	$+V_S$
3	GND
4	CAN-H
5	CAN-L
CASE	shield

Strain sensors

DST55R

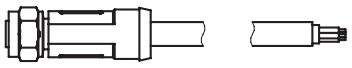
Robust strain sensor for harsh outdoor environment

Ordering code

	DST55R	-	28	.	x x x	.	T	x x	.	A5
Product family Strain sensor	DST55R									
Type of installaion 2 x M8 screws			28							
Measuring range Measuring range 100 µm/m					100					
Measuring range 250 µm/m					250					
Measuring range 500 µm/m					500					
Measuring range 1000 µm/m					102					
Signal polarity positiv Tension							T			
Output signal ±10 VDC								U1		
CANopen								C1		
Electrical connection M12 x 1, 5 pin, male										A5

Accessories (not included in delivery)

Connection cables



Connection cable female, 5 pin, free cable end PE-X, D 7.25 mm, shielded	
11205649	ESG 34CE0200G/OBEZ, L = 2 m
11205638	ESG 34CE0500G/OBEZ, L = 5 m
11205639	ESG 34CE1000G/OBEZ, L = 10 m