

Load Cells

Shear beam load cells
SIWAREX WL230 SB-S SA

Load cell

Overview



The shear beam load cell is particularly suitable for implementation in container, overhead rail conveyor and platform scales.

Design

The measuring element is a shear tension spring made of stainless steel to which strain gauges are applied. The strain gauges are arranged at 45° to the longitudinal axis on the side of the spring body and are therefore subject to shear forces. Under the influence of the load acting in the measuring direction, the spring bodies and therefore the friction-locked strain gauges are elastically deformed. This generates a measuring signal voltage that is proportional to the load.

Technical specifications

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Possible applications	<ul style="list-style-type: none"> • Hopper scales • Conveyor belt scales • Overhead rail scales • Platform scales
Model	Shear beam load cell
Loads	
Rated load/maximum load E_{max}	<ul style="list-style-type: none"> • 0.5 t (0.49 tn. L.) • 1 t (0.98 tn. L.) • 2 t (1.97 tn. L.) • 5 t (4.92 tn. L.)
Minimum initial loading E_{min}	0 kg
Max. working load L_u	150% E_{max} .
Break load L_d	300% E_{max} .
Safe lateral load L_{lq}	100% E_{max}
Measurement characteristic values	
Rated measuring path h_n at E_{max}	
• $E_{max} = 500$ kg (0.49 tn. L.)	0.13 mm (0.005 in)
• $E_{max} = 1$ t (0.98 tn. L.)	0.21 mm (0.008 in)
• $E_{max} = 2$ t (1.97 tn. L.)	0.29 mm (0.011 in)
• $E_{max} = 5$ t (4.92 tn. L.)	0.38 mm (0.014 in)
Rated characteristic value C_n	2.0 ± 0.002 mV/V
Tolerance D_0 of zero signal	≤ ± 1.0% C_n
Max. load cell verification intervals n_{LC}	3 000
Min. load cell verification intervals V_{min}	
• $E_{max} = 500$ kg (0.49 tn. L.)	$E_{max}/10\ 000$
• $E_{max} = 1, 2, 5$ t (0.98, 1.97, 4.92 tn. L.)	$E_{max}/15\ 000$
Minimum application range $R_{min(LC)}$	
• $E_{max} = 500$ kg (0.49 tn. L.)	30%
• $E_{max} = 1, 2, 5$ t (0.98, 1.97, 4.92 tn. L.)	20%

SIWAREX WL230 SB-S SA	
Combined error F_{comb}	± 0.02% C_n
Repeatability F_v	± 0.02% C_n
Creep error F_{cr}	
• 30 min	≤ ± 0.02% C_n
Temperature coefficient	
• Zero signal T_{K0}	0.023% $C_n/5$ K
• Characteristic value T_{KC}	0.017% $C_n/5$ K
Electrical characteristic values	
Recommended reference voltage U_{ref}	5 ... 12 V DC
Input resistance R_e	1000 ± 10 Ω
Output resistance R_a	1004 ± 5 Ω
Insulation resistance R_{is}	5 000 M Ω at 50 V DC
Connection and environmental conditions	
Rated temperature range B_{tn}	-10 ... +40 °C (14 ... 104 °F)
Operating temperature range B_{tu}	-35 ... +65 °C (-31 ... +149 °F)
Storage temperature range B_{ts}	-35 ... +65 °C (-31 ... +149 °F)
Sensor material (DIN)	Stainless steel
Degree of protection according to EN 60529; IEC 60529	IP68
Recommended tightening torque of the fixing screws	
• $E_{max} = 0.5, 1, 2$ t	150 Nm ¹⁾
• $E_{max} = 5$ t	550 Nm ¹⁾
Cable connection	
<u>Function</u>	<u>Color</u>
• EXC +	Green
• EXC -	Black
• SIG +	White
• SIG -	Red
• Shield	Transparent
Certificates and approvals	
Accuracy class according to OIML R60	C3

¹⁾ The tightening torque is to be selected according to the strength class of the screws.

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Selection and ordering data

Article No.

Load cells type WL230 SB-S SA

7MH5107-

Legal-for-trade acc. to OIML R60 up to 3 000d,
connecting cable 3 m (9.84 ft) at 500 kg (1 102.31 lb)
up to 1 t (0.98 tn. L.), connecting cable 6 m (19.68 ft) at
2 t (1.97 tn. L.) up to 5 t (4.92 tn. L.)

D 0

Click on the Article No. for the online configuration in
the PIA Life Cycle Portal.

Rated load

- 500 kg (1 102.31 lb)
- 1 t (0.98 tn. L.)
- 2 t (1.97 tn. L.)
- 5 t (4.92 tn. L.)

3 P

4 A

4 G

4 P

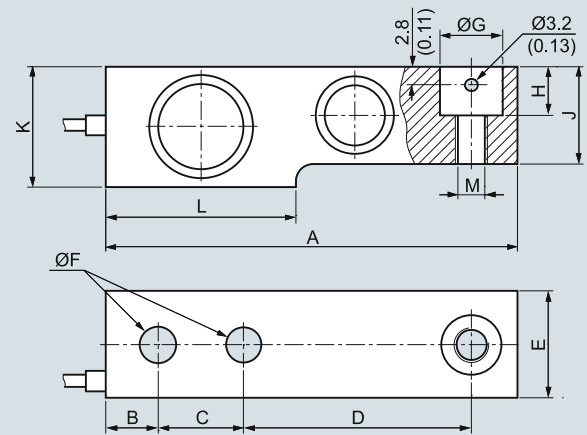
Explosion protection

Without

0

Explosion protection for zones 0, 1, 2, 20, 21, 22

1

Dimensional drawings

Rated load [t]	A	B	C	D	E	ØF
0.5	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
1	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
2	130 (5.12)	16 (0.63)	25.4 (1.00)	76 (2.99)	32 (1.26)	13 (0.51)
5	172 (6.77)	19 (0.63)	38.1 (1.50)	95 (3.74)	38 (1.50)	20.5 (0.81)
Rated load [t]	ØG	H	J	K	L	M
0.5	20.5 (0.81)	14 (0.55)	26 (1.02)	32 (1.26)	57 (2.24)	M12
1	20.5 (0.81)	14 (0.55)	28 (1.10)	32 (1.26)	57 (2.24)	M12
2	20.5 (0.81)	14 (0.55)	32 (1.26)	36 (1.42)	57 (2.24)	M12
5	30.2 (1.89)	20 (0.79)	40 (1.57)	44 (1.73)	76 (2.99)	M20

SIWAREX WL230 SB-S SA load cell, dimensions in mm (inch)