Web tension load cell PD 21 / PD 22

Reliable web tension monitoring helps avoid web tears and thus reduce production costs. E+L load cells continuously record the tension in the moving web and supply this value as an analog signal. As such, they provide the prerequisite for reliable web tension measuring and control.
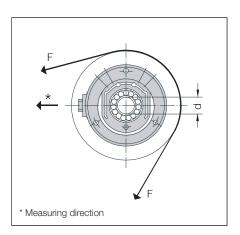

Technical features

- Maximum operational reliability due to an overload factor of 20 (20 times the nominal measuring force).
- No influence of the roller weight on the measuring result given horizontal mounting.

- Wide measuring range from 1 : 25 (e.g. given F nom. = 1000 N linear signal from 40 N to 1000 N)
- Favourable temperature behaviour and high degree of linearity of the measuring elements due to strain gauge application on a level surface.

- Easy, flexible mounting anywhere with various mounting options, e.g. flange bearing, pedestal bearing, inner or outer securing.
- High permissible operational speed for measuring roller due to high load cell spring coefficient.

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Function

The web tension load cell consists mainly of an outer ring with a cover, centering flange and an inner ring, which both functions as a measuring element and accommodates the measuring roller bearing. It records the radial bearing forces of the measuring roller covered by the textile web. The inner ring is designed as a dual flexible beam to which the strain gauges are attached and switched to form a measuring bridge. Due to the influence of the forces to be measured, a change in resistance in the strain gauges takes place, effecting a deviation in the electrical output signal corresponding to the radial force components.
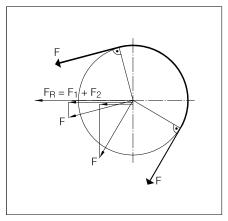

* Measuring direction

Option table

Typ Drill hole on one side	Drill hole on both sides	d (mm)	Nominal measuring force (kN)					
PD 2112	PD 2212	12	0,05	0,1		0,2	0,5	1
PD 2115	PD 2215	15	0,05	0,1		0,2	0,5	1
PD 2117	PD 2217	17	0,05	0,1*		0,2	0,5*	1
PD 2120	PD 2220	20		0,15	0,3	0,75	1,5	
PD 2125	PD 2225	25		0,15*	0,3	0,75*	1,5	
PD 2130	PD 2230	30		0,3	0,6	1,5	3	
PD 2135	PD 2235	35		0,3*	0,6	1,5*	3	
PD 2140	PD 2240	40		0,6	1,2	3	6	
PD 2145	PD 2245	45		0,6	1,2	3	6	
PD 2150	PD 2250	50		0,6*	1,2	3*	6	
PD 2155	PD 2255	55		1	2	5	10	
PD 2160	PD 2260	60		1	2	5	10	
PD 2165	PD 2265	65		1	2	5	10	

* Preferred variables

Calculation

$$F_R = F_1 + F_2$$

For measuring purposes, only those components, i.e. F_1 and F_2 effective in the direction of measuring, are relevant. The resultant measuring force is the sum of $F_1 + F_2$. This is halved, given centred web travel, between the two load cells.

Technical data PD 21 /PD 22

Precision class	0.5
Nominal characteristic value (sensitivity	1 mV/V
Combined error (Hysteresis/non-linearity)	< 0.5 %
Characteristic value tolerance	0.2 %
Measuring principle	Full strain gauge bridge
Nominal strain gauge bridge resistance	700 ohms
Bridge supply voltage - Nominal value - max. permissible value	10 V 14 V
Mechanical stop Normal load Limit load	1.8 to 2.4 F_N depending on type 1.8 to 2.4 F_N 20x F_N
Nominal measuring path	0.1 to 0.2 mm depending on type
Nominal temperature range Normal temperature range	-10 to +60 °C -10 to +90 °C
Temperature coefficient - of the characteristic value - of the zero signal	±0.3 % / 10 K ±0.3 % / 10 K
Protection class	IP 50
Max. permissible axial transversal force	1x F_N
Weight	2.3 kg (d = 17 mm) 3.6 kg (d = 25 mm) 8.5 kg (d = 35 mm)

Technical data subject to modification without notice