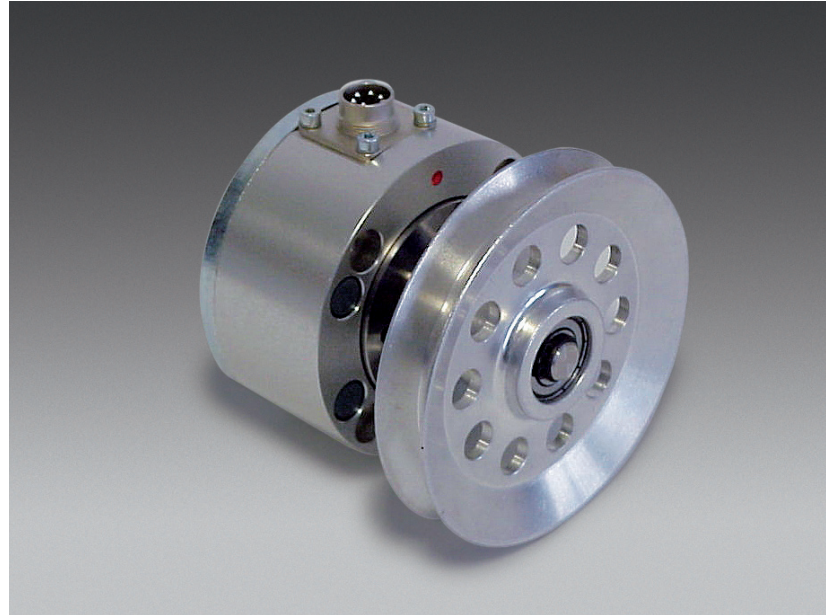


FMS Tension Control / Force Sensors

## **CR-Series Compact force sensor with flexible installation options for pulley**

- **Easy Installation of standard pulleys**  
3 sizes with shaft journal diameters of 8, 10 and 12 mm
- **For a wide range of applications**  
Nominal force ratings from 50 to 1'500 N (11 to 330 lbf.)
- **Precise measuring results**  
Measuring range 30:1  
Accuracy class  $\pm 0.5\%$
- **No need to change a standard machine design for special applications**  
Options include high temperature and vacuum chamber (to 10<sup>-7</sup> hPa) construction
- **Robust and durable**  
Overload protection rating of 10-times nominal force, stainless steel sensor body



### **CR-Series**

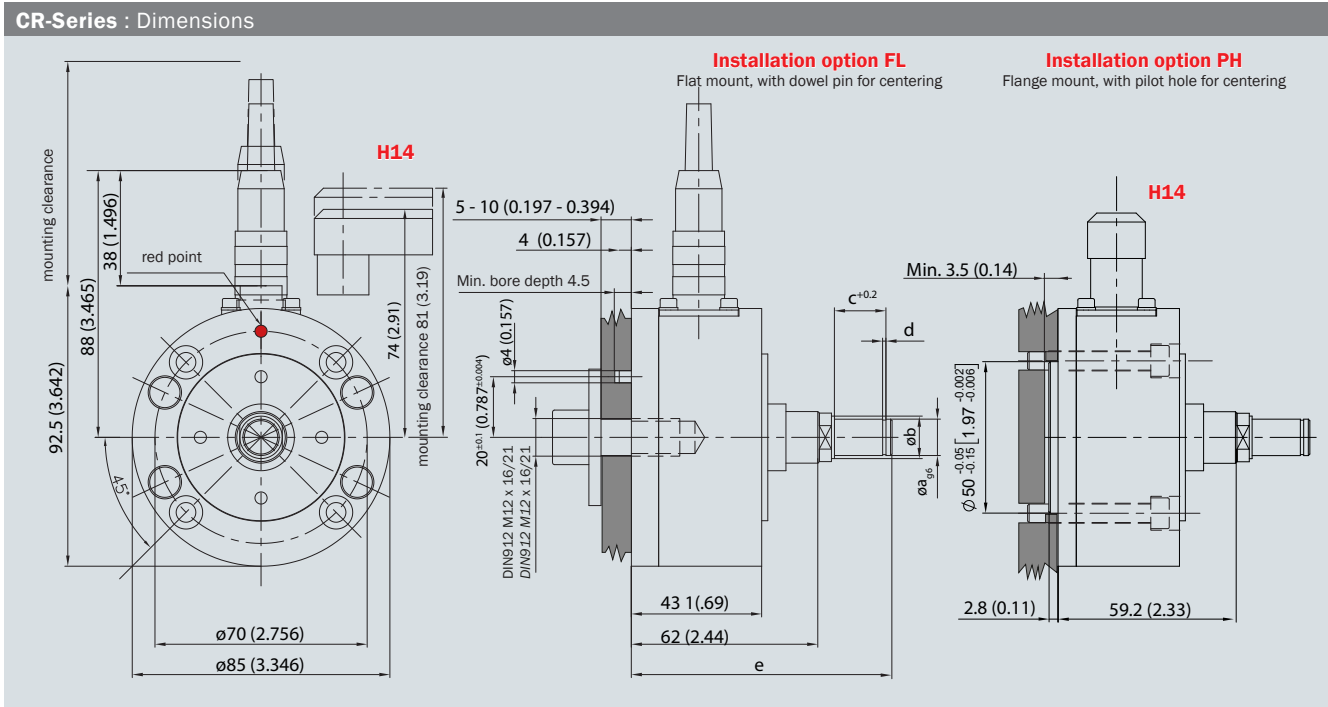
The CR-Series force sensor offers compact dimensions and flexible installation options, and are designed for the measurement of tension on continuous material processing lines for filament materials. This product will accept a huge variety of different standard pulleys and therefore be applied versatilely. The product can be supplied with a Pilot or without a Pilot at the back the unit. In addition, flexible mounting options include the ability to install the unit utilizing either four fasteners from the front or a single fastener from the rear. The included dowel pin can also be incorporated between force measuring bearing and the machine frame to ensure proper unit orientation. For installations where a Pillow Block mount is required the optional bracket can be utilized. Shaft journal diameters of 8, 10 and 12 mm allow easy installation of standard pulleys. Standard pulleys are not supplied by FMS.

### **Funktional description**

The CR-Series force sensor combines the bearing seat and the force sensor within the same housing, thus minimizing the required installation space. The substantial overload protection translates to eliminated/minimized calibration issues due to machine upset conditions. The design includes dual bending beams, and this serves to eliminate the load specific influence of torque. The movement of the bending beams, which is proportional to the applied force, is detected by strain gauges arranged in a full bridge circuit and then converted into an electrical signal. This simple measurement principle delivers precise results even with low material tension and small web wrap angles. The Red Point, as located on the sensor body, should be aligned with the direction of the resultant force due to web tension.

DATA SHEET

FMS Tension Control | Force Sensors | **CR-Series**



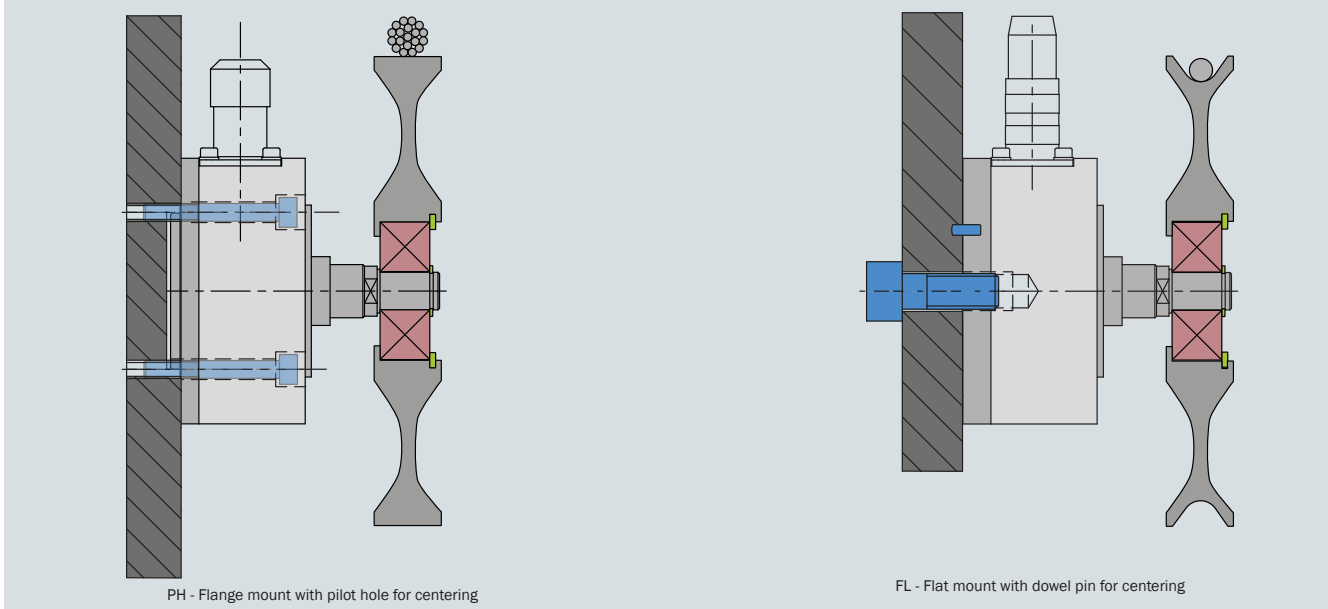
**CR-Series : Deflection, Dimensions**

Sensors Type	Deflection mm (.in)	Dimensions mm (.in.)					
		a	b	c	d	e	
<b>CR208</b>	0.1 (0.0039)	8 (0.3149)	10 (0.3937)	7.8 (0.3071)	0.9 (0.0354)	76 (2.9921)	
<b>CR210</b>	0.1 (0.0039)	10 (0.3937)	12 (0.4724)	17 (0.6693)	1.1 (0.4330)	86 (3.3858)	
<b>CR212</b>	0.1 (0.0039)	12 (0.4724)	14 (0.5512)	17 (0.6693)	1.1 (0.4330)	86 (3.3858)	

**CR-Series : Nominal forces, Weight**

Sensors Type	Nominal force N (lbf.)	Weight kg (.lbs)
<b>CR208</b>	50, 125, 250, 500, 1000, 1500 (11, 27, 55, 110, 220, 337)	1.28 (2.82)
<b>CR210</b>	50, 125, 250, 500, 1000, 1500 (11, 27, 55, 110, 220, 337)	1.28 (2.82)
<b>CR212</b>	50, 125, 250, 500, 1000, 1500 (11, 27, 55, 110, 220, 337)	1.28 (2.82)

**CR-Series : Installation options**



CR-Series : Technical Data	
<b>Sensitivity</b>	1.8 mV/V
<b>Tolerance of sensitivity</b>	< ± 2%
<b>Accuracy class</b>	± 0.5% (F <sub>Nom</sub> )
<b>Temperature coefficient</b>	± 0.1% / 10 K
<b>Temperature range</b>	-10 °C to +60 °C (14 F to 140 F)
<b>Input resistance</b>	350 Ω
<b>Power supply</b>	1 to 10 VDC
<b>Overload protection</b>	10-times nominal force F <sub>Nom</sub>
<b>Material main body</b>	Stainless steel
<b>Protection class</b>	IP 42
<b>Electrical connection</b>	Male connector M16x0.75, 5-pole
<b>Repeatability error</b>	0.05%
<b>Measuring range</b>	30:1

CR-Series : Order code	
<b>CR 212 .50 .12 .FL .H14</b>	Options
	Installation option FL with with dowel pin for centering
	Journal diameter in mm
	Nominal force rating in N
	Size
	Series

CR-Series : Options	
<b>FL</b>	Flat face of force sensor, without shoulder, single screw mount, with dowel pin
<b>PH</b>	Flange mount with 4 screws, pilot hole for centering
<b>H14</b>	Right-angle connector in scope of supply, replaces straight connector
<b>H16</b>	Temperature range up to 120 °C (248 °F)
<b>H21</b>	Electrical connection with PG gland with 5 m (16 ft.) cable, replaces connector
<b>H31</b>	For vacuum applications to 1E-7 hPa 1E-5 Torr, temperature range up to 120 °C (248 °F)
<b>H32</b>	Vacuum to 1E-7 hPa 1E-5 Torr, up to 150 °C (302 °F), with pg-gland and 5 m (16 ft.) cable
<b>H33</b>	Temperature range up to 150 °C (302 °F), with pg-gland and 5 m (16 ft.) cable

CR-Series : Scope of supply	
<ul style="list-style-type: none"> <li>● force sensor ● straight connector (female) ● clip ring ● installation option PH: 4 pcs. DIN912 M6 x 40 ● installation option FL: dowel pin</li> </ul>	

CR-Series : Accessories	
<ul style="list-style-type: none"> <li>● prefabricated cable (1 m (3.25 ft.), 5 m (16.4 ft.), 10 m (32.8 ft.), or specify other length), with straight or right-angle female connector</li> <li>● installation bracket CA203.MB</li> </ul>	

**CR-Series** : Typical application



**Other products** : Tension Control

Measuring Amplifiers	Tension Controllers	Intrinsically Safe Barrier
		

**About us**

FMS Force Measuring Systems AG is the market leader in the field of web tension measurement, control and specialist for web guiding solutions. For the wire industry we are the only manufacturer offering a complete range of technologies for force measurement, data processing and radio transmission of signals.

Our in house developed products are used in the manufacturing industry, converting, metals, paper, textiles, as well as in cable and wire rope production. Utilising the latest technology, high quality components and a firm understanding of customer applications, FMS supports customers worldwide in the effort to maximize the productivity of their machines. Since 1993, our highly qualified employees have been creating high-end solutions for machine builders and plant operators. As an owner-managed company, we pride ourselves on being personal and approachable with the ability to make decisive moves fast.

**World Headquarters: FMS Force Measuring Systems AG**

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