

FMS Tension Control / Force Sensors

C-Series Compact force sensors with flexible installation options for use with live shaft rolls

- **For machines with restricted installation space**
Compact dimensions and various installation options
- **For a wide range of applications**
Nominal force ratings from 50 to 2'000 N (11 to 440 lbf.)
- **No need to change a standard machine design for special applications**
Options include high temperature and vacuum chamber (to 10⁻⁷ hPa) construction
- **Precise measuring results**
Measuring range 30:1
Accuracy class $\pm 0.5\%$
- **Robust and durable**
Overload protection rating of 10-times nominal force, stainless steel sensor body

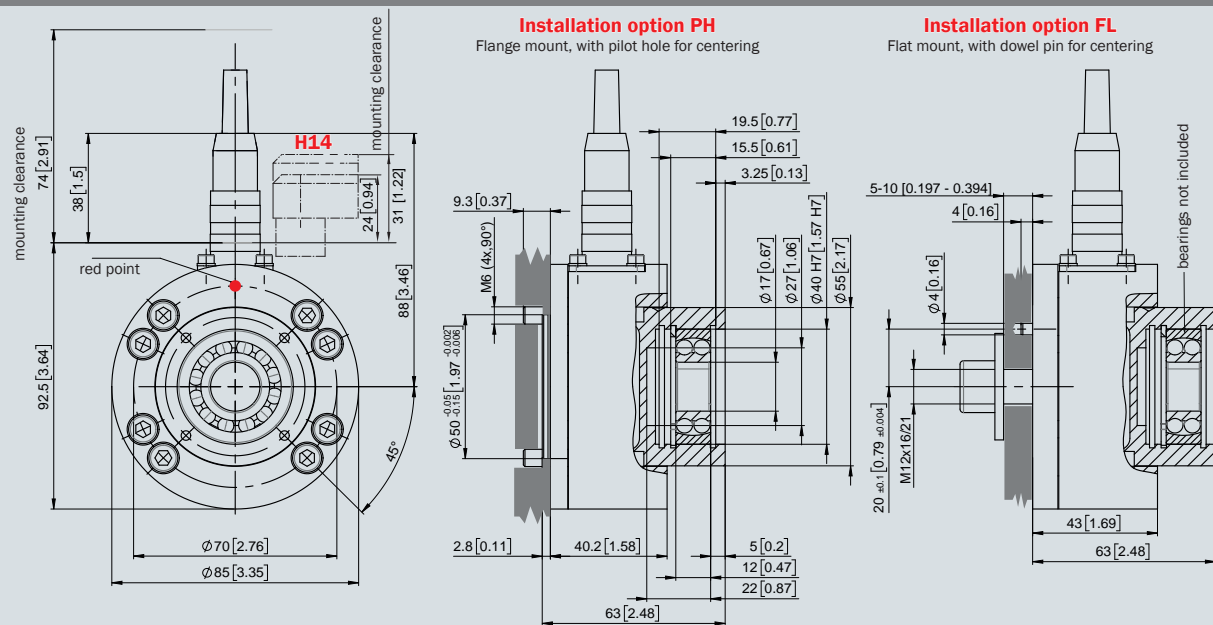
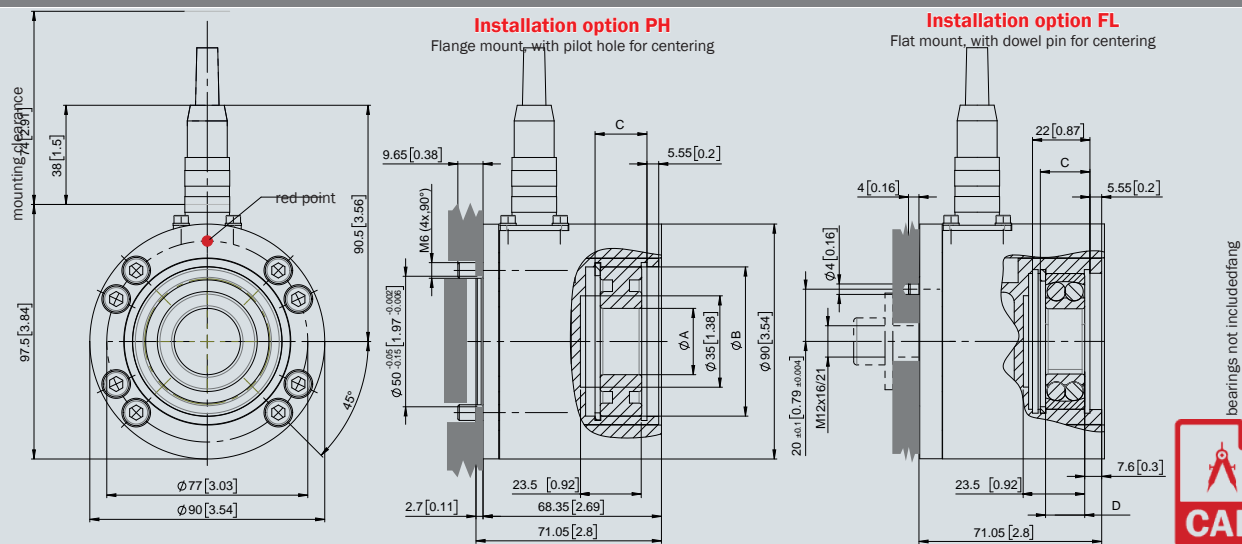


C-Series

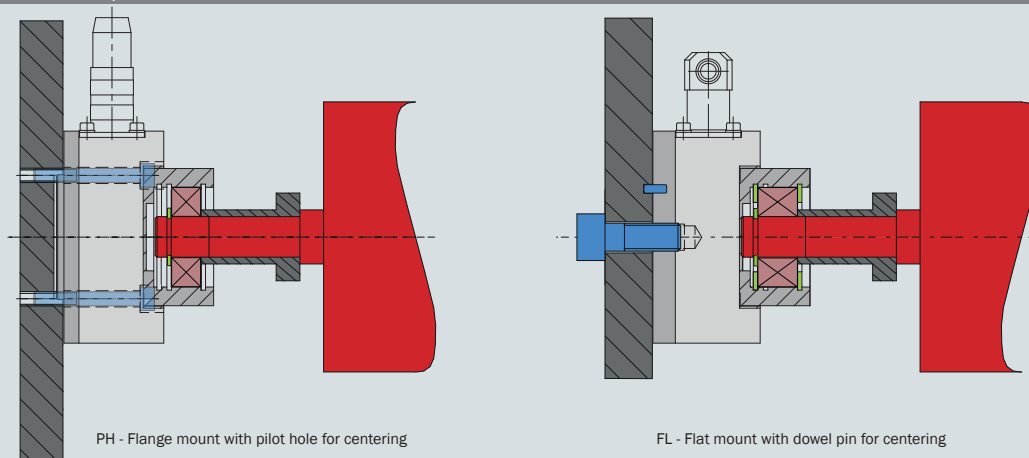
The C-Series force measuring sensor offers compact dimensions and flexible installation options, and is designed for the measurement of tension on continuous material processing lines where live shaft idler rolls are utilized. The product can be supplied with a Pilot or without a Pilot at the back the 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.

Funktional description

The C-Series force measuring 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.

C-Series : C203 Dimensions**C-Series : C205 and C225 dimensions****C-Series : C205 and C225 dimensions**

Size	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)
C205	25 (0.98)	52 (2.05)	19 (0.75)	15 (0.59)
C225	25.4 (1.00)	57.15 (2.25)	19.88 (0.78)	15.88 (0.63)

C-Series : Installation options

C-Series : Nominal forces, Total deflection, Weight, Shaft diameter				
Series Type	Nominal force N (.lbf)	Tot. deflection mm (.in)	Weight kg (.lbs)	Shaft diameter mm (in.)
C203	50 (11), 125 (27), 250 (55), 500 (110), 1000 (220)	0.15 (0.0059)	1.06 (2.34)	17 (0.67)
C205 and C225	125 (27), 200 (45), 375 (82), 750 (165), 1500 (330), 2000 (440)	0.15 (0.0059)	1.26 (2.78)	25 (0.98) 25.4 (1.00)

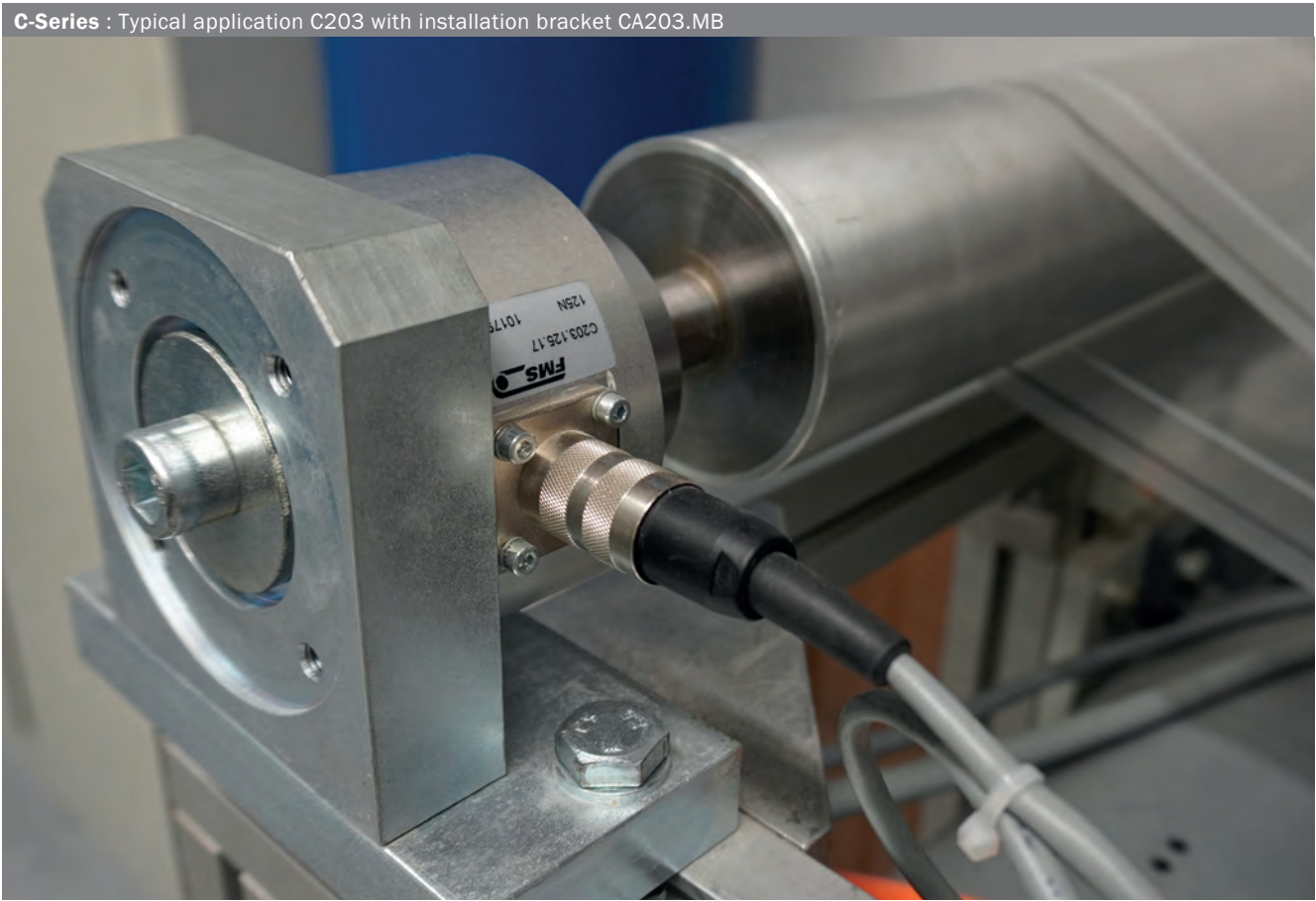
C-Series : Technical data	
Sensitivity	1.8 mV/V
Tolerance of sensitivity	< ±2 %
Accuracy class	± 0.5 % (F _{Nenn})
Temperature coefficient	± 0.1 % / 10 K
Temperature range	-10 °C to +60 °C (14 F to 140 F)
Input resistance	350 Ω
Power supply	1 to 10 VDC
Overload protection rating	10-times nominal force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

C-Series : Order code	
C 203 .1000 .17 .PH .H14.H16	
	Options
	Installation option PH with pilot hole for centering
	Shaft diameter in mm
	Nominal force rating in N
	Sizes 203, 205 and 225
	Series

C-Series : Options	
FL	Flat face of force sensor, without shoulder, single screw mount, with dowel pin
PH	Flange mount with 4 screws, pilot hole for centering
H14	Right-angle connector in scope of supply, replaces straight connector
H16	Temperature range up to 120 °C (248 °F)
H21	Electrical connection with PG gland with 5 m (16.4 ft.) cable, replaces connector
H31	For vacuum applications to 1E-7 hPa, 1E-5 Torr, temperature range up to 120 °C (248 °F)
H32	Vacuum to 1E-7 hPa 1E-5 Torr, up to 150 °C (302 °F), with pg-gland and 5 m (16.4 ft.) cable
H33	Temperature range up to 150 °C (302 °F), with pg-gland and 5 m (16.4 ft.) cable

C-Series : Scope of supply	
● force sensors ● straight connector (female) ● clip ring ● installation option PH: 4 pcs. DIN912 M6 x 40 ● installation option FL: dowel pin	

C-Series : Accessories	
● 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	
● 1203 self-aligning ball bearing ● 2203 self-aligning ball bearing ● 1205 self-aligning ball bearing ● 2205 self-aligning ball bearing	
● NLJ1 imperial self-aligning ball bearing ● mounting bracket CA203.MB ● mounting bracket CA205.MB	



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.