



Installation Instructions

RMGZ400C

Medium size force sensor for pulley

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**Diese Montageanweisung ist auch in Deutsch erhältlich.
Bitte kontaktieren Sie die nächstgelegene FMS Vertretung.**

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2 Safety Information

All safety information, operating and installation regulations listed here ensure proper function of the device. Safe operation of the system requires compliance at all times. Noncompliance with the safety information or using the device outside of the specified performance data can endanger the safety and health of persons.

Work with respect to operation, maintenance, retrofit, repair, or setting the device described here must only be performed by expert personnel.

2.1 Presentation of Safety Information

2.1.1 Danger that Could Result in Minor or Moderate Injuries



Danger, warning, caution

Type of danger and its source

Possible consequences of nonobservance

Measure for danger prevention

2.1.2 Note Regarding Proper Function



Note

Note regarding proper operation

Simplification of operation

Ensuring function

2.2 General Safety Information



The force sensors may not be subjected to loads outside of the specified values during installation and operation later



The fastening points for supporting the force sensor must be designed correctly. Pay attention to correct installation of the pillow blocks.

3 Product Information

3.1 Product description

The force sensors of the RMGZ400-Series are used for the tension measurement in filamentary material. A large variety of standard pulleys can be mounted on the rotating flange. The installation of the force sensor to the machine frame is realized by means of a bore with keyway. The force sensors of the RMGZ400-Series can be used in static applications as well as for measurements in rotating applications (planetary or tubular stranders, bunchers, twisters, etc.). Standard pulleys are not supplied by FMS.

3.2 Functional description

The RMGZ400-Series force measuring sensor combines the bearing seat of the pulley 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 movement of the bending beam, 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 material tension.

3.3 Designations

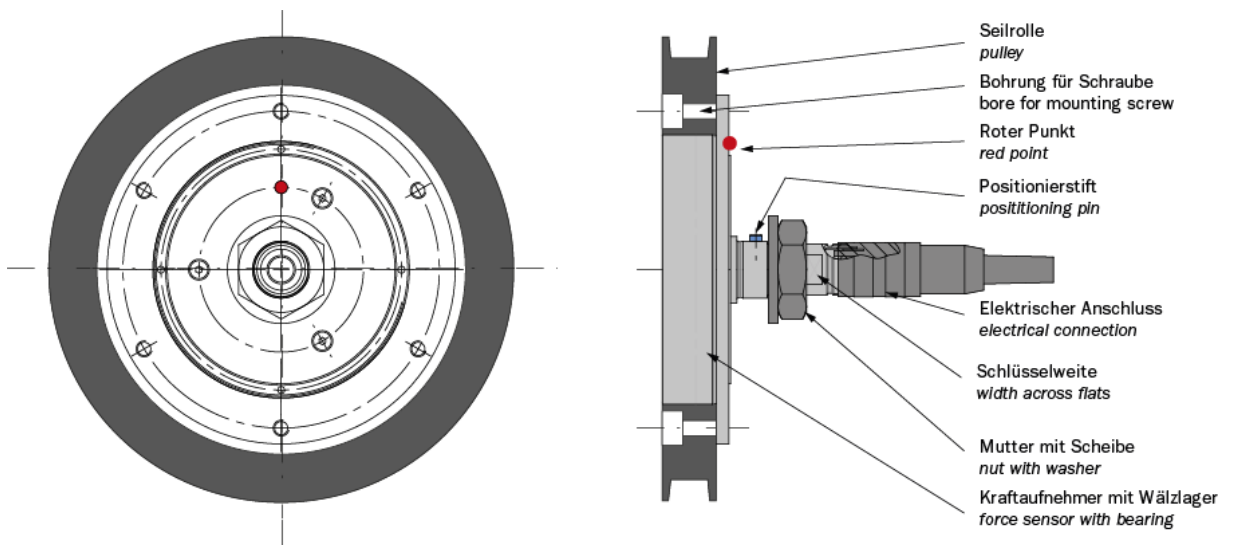


Figure 1: Designations

3.4 Scope of delivery

Included in scope of delivery

Force sensor, straight connector (female), installation nut with washer

Options

H14 right-angle connector in scope of supply, replaces straight connector

H16 temperature range up to 120°C (248°F)

H18 with water tight, straight connector, replaces original conector

Accessories

Prefabricated cable (specify length) with connector (straight or right-angle)

3.5 Order code

RMGZ400C-Series : Order code			
RMGZ4	00C	.100	.H22
			Options
			Nominal force rating in N
			Size, design revision C
			Series

Figure 1: order code

4 Installation

4.1 Preparation

The force sensors are defined as “incomplete machine” in line with EC Directive 2006/42/EC, Article 2. When installing the force sensors, the following conditions must be met to ensure proper function and installation in a machine without negative impact on safety and health of persons:



The force sensors may not be subjected to loads outside of the specified values during installation and operation later



The fastening points for supporting the force sensor must be designed correctly. Pay attention to correct installation of the pillow blocks.



The force sensors must be connected electrically correctly.

4.2 Preparing the Machine Frame

The force sensors of the RMGZ400-series are usually mounted on a mounting bracket which is installed on the machine frame or on the rotating lay plate of a stranding machine. The integrated flange on the force sensor provides M5 threads for easier assembly. If mounting brackets are used, they need to have mounting holes with a spline groove



If the force sensor is used as a replacement for their predecessor products RMGZ400A or RMGZ600A, the 4mm [0.157 in.] position pin must be replaced with the supplied pin $\varnothing 3 \times 5$ [0.118 in. x 0.197 in.].

4.3 Installation for rotating applications

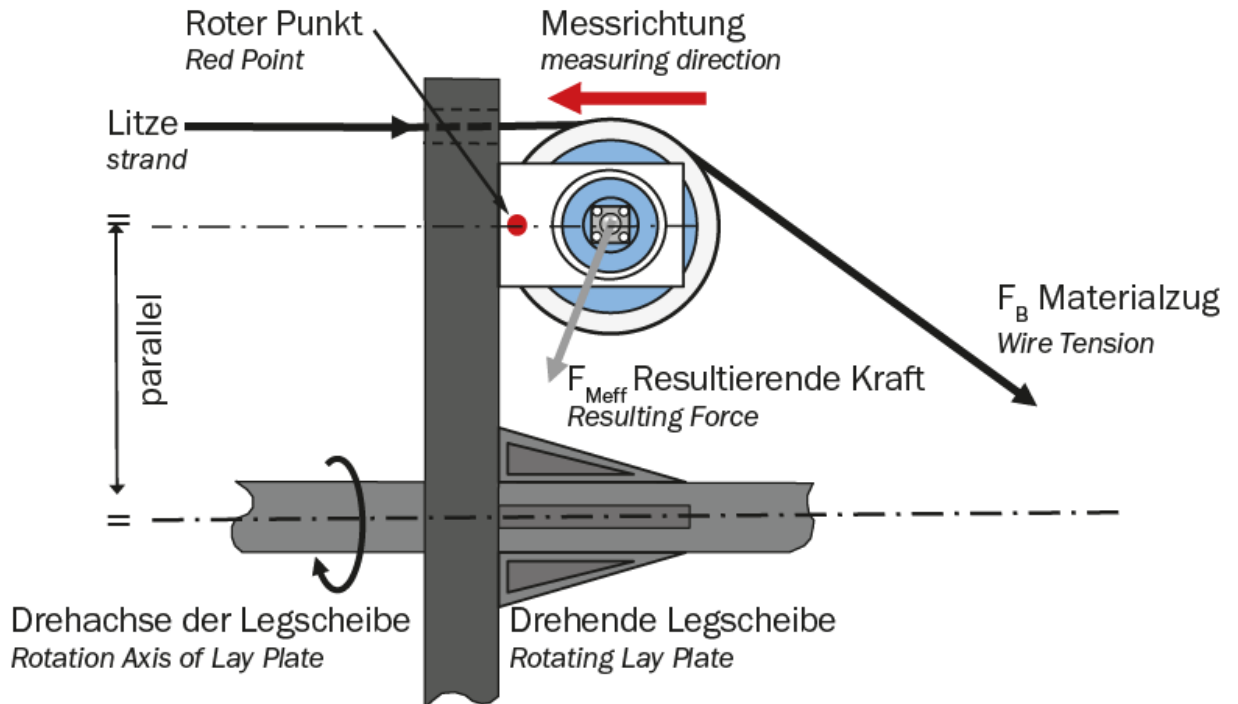


Figure 2: rotating applications



It is of importance to compensate the centrifugal forces caused by the rotating lay plate of the strander. In fast rotating machines already a small deviation in parallelism between rotation axis and Red Point (of e.g. 0.3°) can lead to a zero-point error.

The adjustment of the Red Point and hence the quality of the sensor adjustment can be tested after offset compensation and calibration. If the reading of an unloaded force sensor stays at zero (e.g. 0 N) regardless of the load cell position (e.g. at 12 o'clock or at 6 o'clock position), the red point is correctly aligned.

4.4 Installation for static applications

The support surface for the mounting brackets on the machine frame must be meticulously crafted. The brackets are mounted on the machine. The force sensor is screwed to the mounting holes of the mounting brackets whereas the spline groove holds the position pin preventing the roller from twisting out of position. The position of the red point and the position of the pin are aligned to each other. Their positions depend on the direction of the resulting force. If the force acts in the direction of the red point, the measuring amplifier will show positive measuring values.

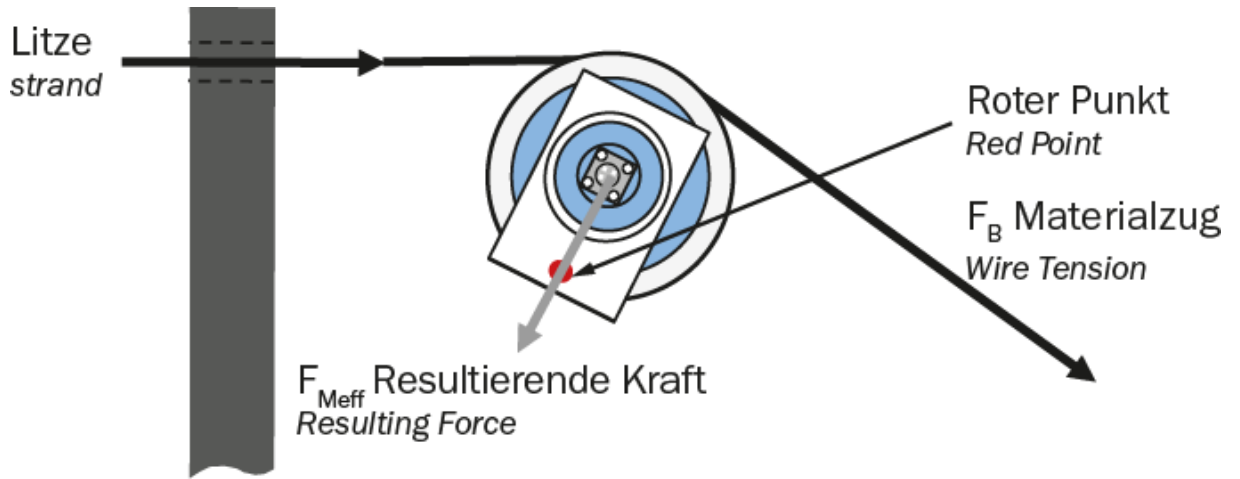


Figure 3: static applications

4.5 Electrical Connection

The connection between force sensor and measuring amplifier is realized using a 4x0.25mm² [AWG 23] cable. The cable must be routed separately from the power cable.

The cable shielding must only be connected on the side of the measuring amplifier.

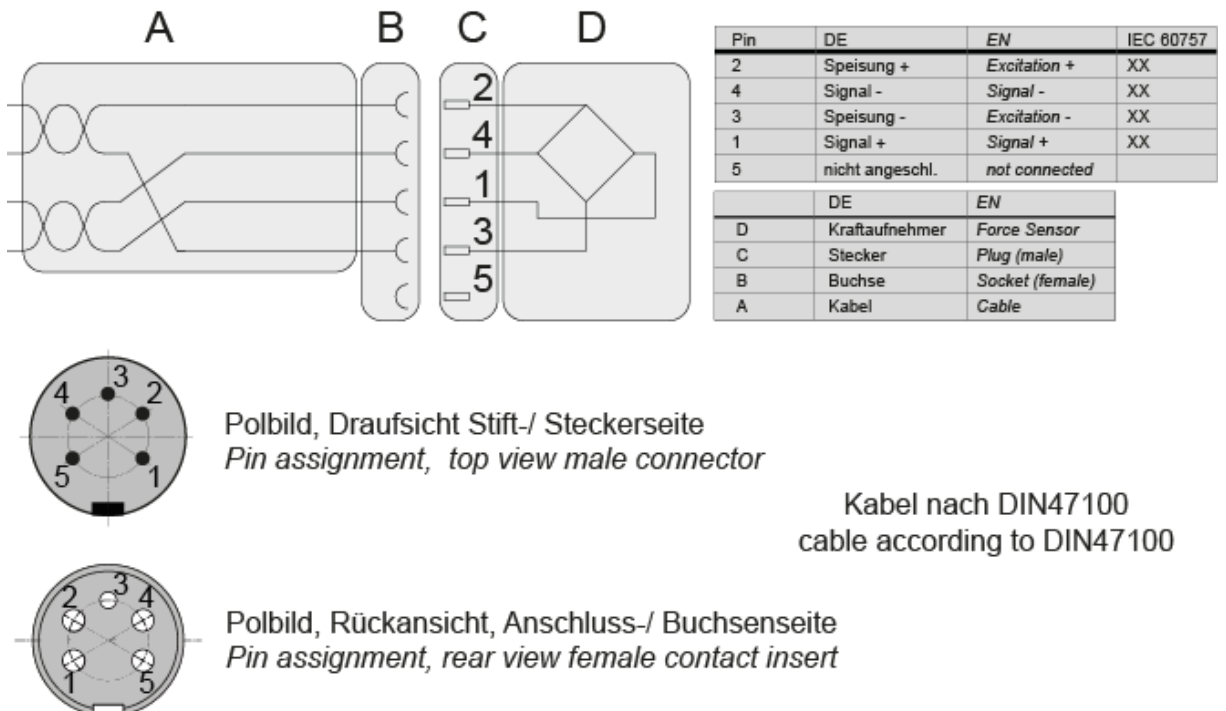


Figure 2: Electrical Connection

5 Technical Data

Designations	
Sensitivity	1.8 mV/V
Sensitivity tolerance	<± 0.2 %
Accuracy class	± 0.5% (F _{Nom})
Temperature coefficient	±0.1% / 10 K
Temperature range	-10 to +60 °C (14 to 140 F)
Input resistance	350 Ω
Excitation voltage	1 to 8.5 VDC
Overload protection	10-times the nominal force F _{Nom}
Measuring body material	Steel
Protection class	IP40
Measuring range	30:1
Repeatability	0.05%
Electrical connection	Male connector M16 x 1.5, 5-pole

Table 1: Technical Data

6 Dimensions

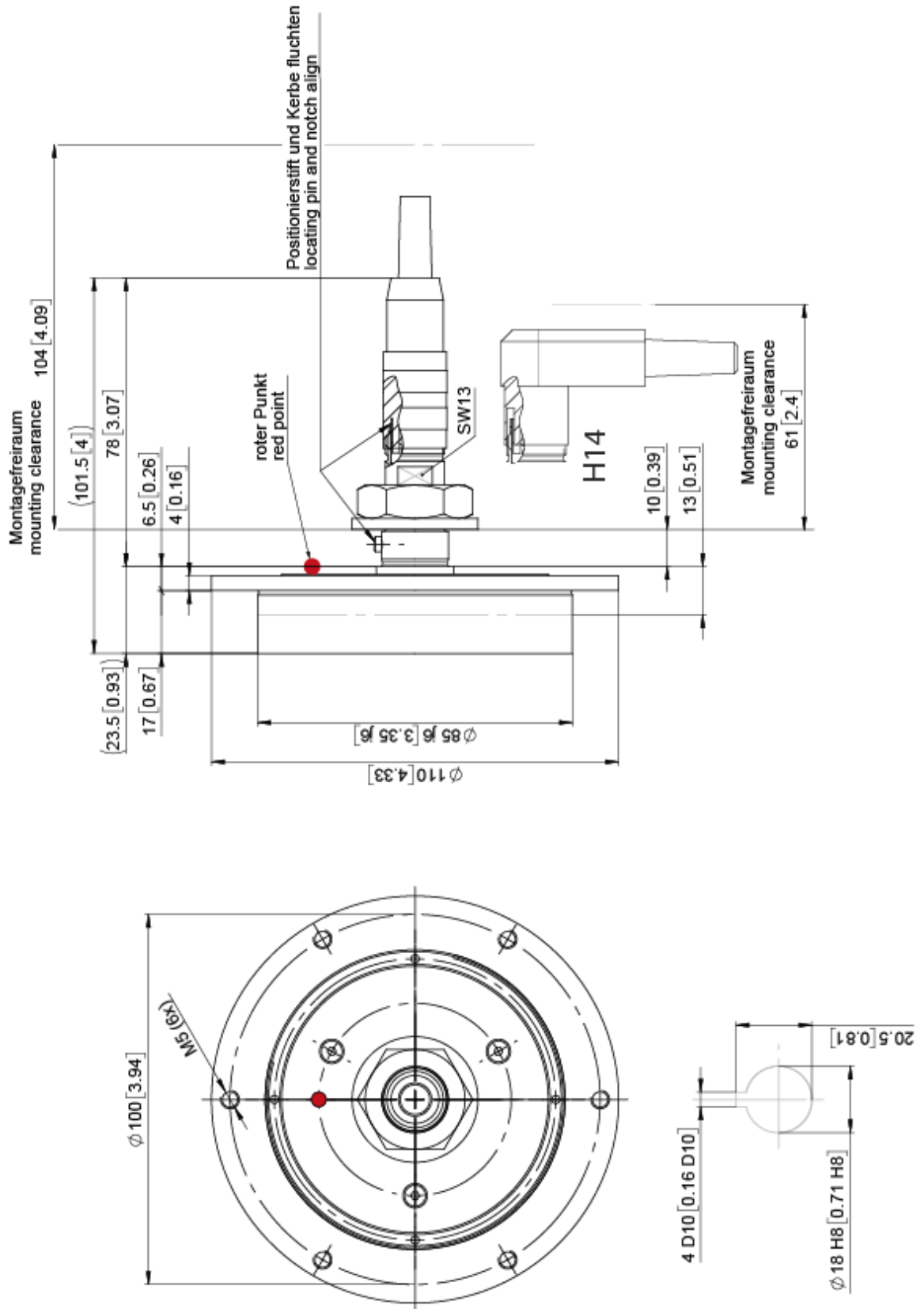


Figure 4: Dimensions



FMS Force Measuring Systems AG
Aspstrasse 6
8154 Oberglatt (Switzerland)
Tel. 0041 1 852 80 80
info@fms-technology.com
www.fms-technology.com

FMS USA, Inc.
2155 Stonington Avenue Suite 119
Hoffman Estates., IL 60169 (USA)
Tel. +1 847 519 4400
fmsusa@fms-technology.com