

PMGZ Force Measuring Blocks for the Paper Industry

10 times overload protection

Recalibration is not required

Nominal forces from 2 – 100 kN

Sizes for every application

Stainless steel force sensors

Permanently corrosion-resistant

**Waterproof and Hi-Temperature
capable to 120°C**

Performance in a variety of environments



● PMGZ

PMGZ force measuring blocks are extremely durable, accurate and reliable. Tension values as low as 5 % of the nominal force can be consistently measured with a high level of accuracy. The combination of stainless steel and mechanical overload protection makes PMGZ force measuring blocks ideal for all paper tension measuring applications. These force sensors are perfect for difficult ambient conditions, e.g. cooling water, wet paperpulp, high temperatures and humidity. They can be used in virtually any wet environment. PMGZ force measuring blocks can be combined with all FMS measuring amplifiers.

● Measurement principle

The measuring force is applied to the force sensor via the plunger block. Four foil-type strain gauges configured in a full Wheatstone bridge hermetically sealed and encapsulated measure the applied forces and thus the material tension. A mechanical hard stop ensures the highest overload protection and makes the sensor virtually indestructible. This combination guarantees the highest accuracy and reliability without the need for recalibration.

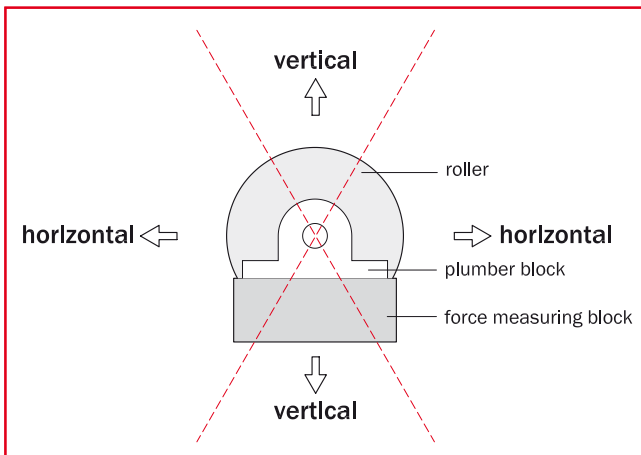
Functional Description

The measuring force is applied to the force sensor via the plunger block. A horizontal or vertical measuring direction (depending on the type of force measuring block) guarantees

an accurate measurement of the resulting force. The red point on the force sensor indicates the measuring direction. The PMGZ force measuring blocks provide an extremely accurate

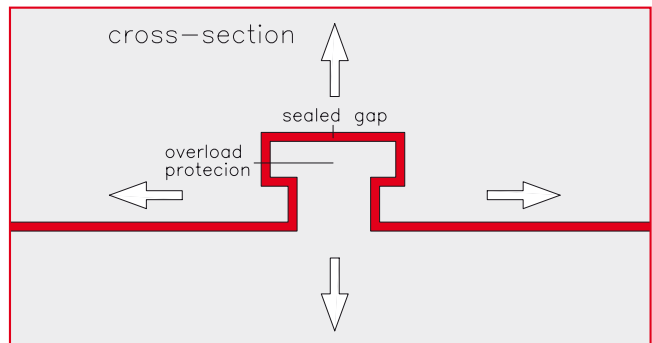
and precise web tension measurement even with small wrap angles and heavy rollers.

• Horizontal or vertical force measuring block



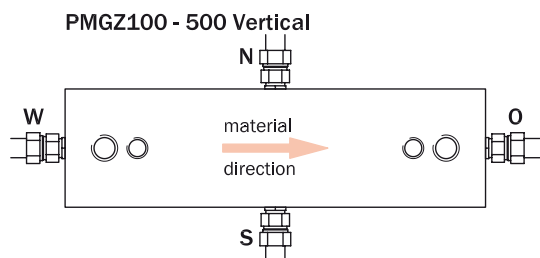
Depending on the resulting measuring force direction, a horizontally or vertically measuring PMGZ force measuring block is selected.

• Integrated mechanical overload protection



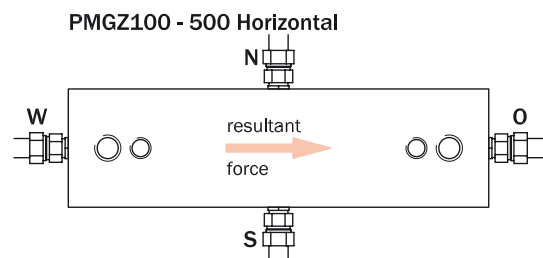
All PMGZ force measuring blocks have an integrated mechanical overload protection system. The PMGZ force measuring block moves to the mechanical end stop at about 120 % of the nominal measuring force. Such a structure ensures the highest possible level of accuracy and functional stability. No recalibration is required because of this mechanical overload protection.

• Electrical connections for horizontal or vertical design



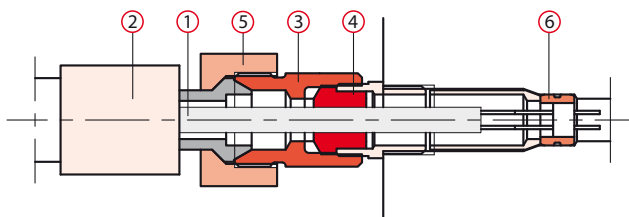
Standard: W (can also be used as O version if both sensors have the same running direction.)

Option: N,S,O



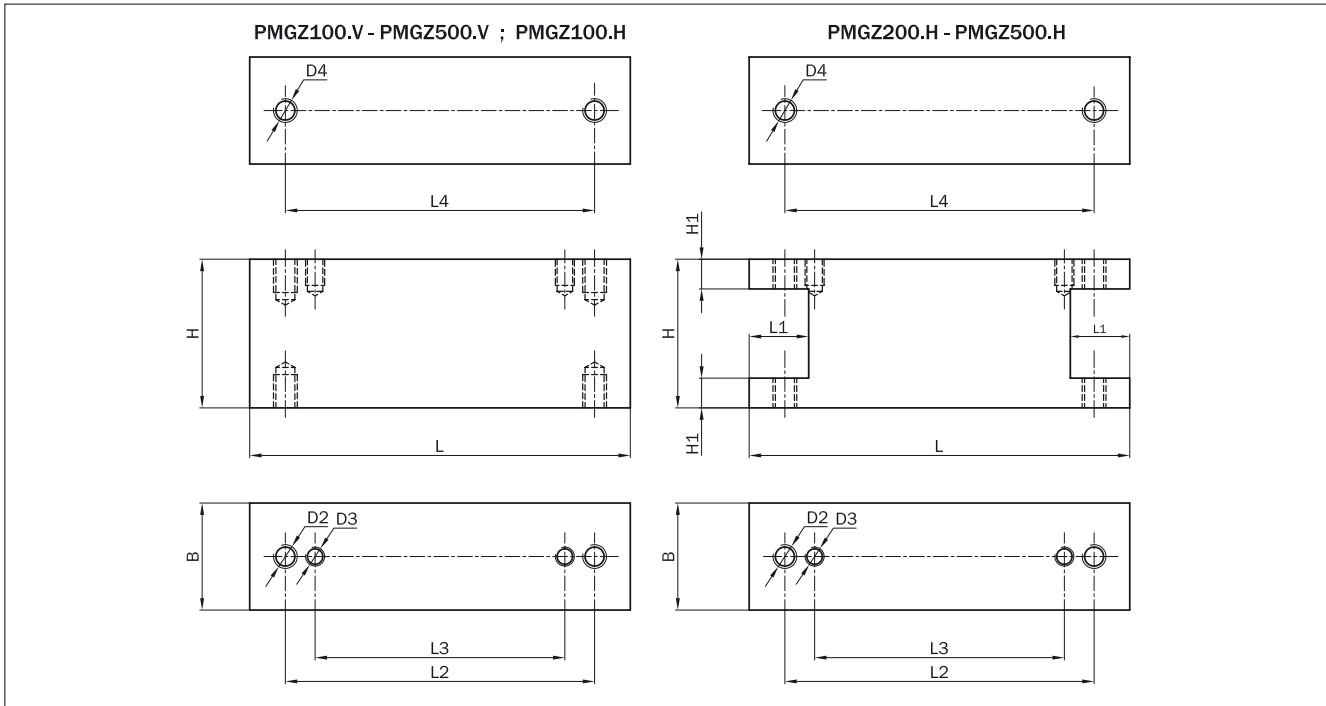
Standard: N,S
Option: O,W (on request only)

FMS Sealing



- ① Cable
- ② Protective tube
- ③ Connection gland and tube
- ④ Gland without screw nut
- ⑤ Screw nut of protective tube
- ⑥ Glass sealing

PMGZ • Design and dimensions



PMGZ • Plummer block / Nominal force

Mounting holes for plummer block	Shaft diameter d ø	Nominal force [kN]	PMGZ Series
130 x M12 or 170 x M12	20 – 50	2, 5, 10, 20	PMGZ 100
210 x M16 or 260 x M20	40 – 85	2, 5, 10, 20, 30, 40	PMGZ 200
320 x M24	75 – 100	5, 10, 20, 50	PMGZ 300
350 x M24	85 – 120	10, 20, 50, 100	PMGZ 400.350
390 x M24	100 – 110	10, 20, 50, 100	PMGZ 400.390
470 x M30	110 – 160	10, 20, 50, 100	PMGZ 500

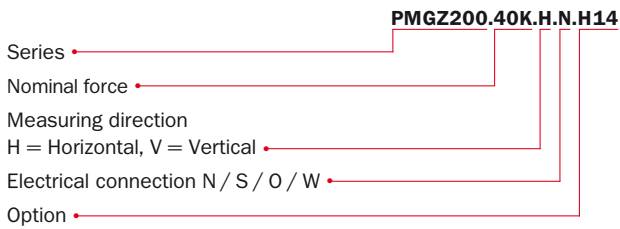
PMGZ • Dimensions

PMGZ Series	Dimensions in mm			Attachment for adapter plate		Lower attachment L4 x D4	Stiffness at F _{nom.} ca. [mm]		Weight max. kg
	L	B	H	L2 x D2	L3 x D3		< 10 kN	≥ 10 kN	
PMGZ100	230	90	125	170 x M12	130 x M12	170 x M16	0,5	0,2	20
PMGZ200	320	90	125	260 x M20	210 x M16	260 x M20	0,5	0,2	28
PMGZ300	380	110	125	320 x M24		320 x M24	0,5	0,2	41
PMGZ400.350	450	130	125	350 x M24		390 x M24	0,5	0,2	57
PMGZ400.390	450	130	125	390 x M24		390 x M24	0,5	0,2	57
PMGZ500	560	170	150	470 x M30		470 x M30	0,5	0,2	111

PMGZ • Technical data

Sensitivity	1.8 mV/V	Supply voltage	1...12 VDC
Tolerance of sensitivity	< ± 0.2 %	Maximum overload	> 10-times the rated nominal force
Accuracy class	± 0.5 % (F _{nominal})	Material for sensor	Stainless steel
Temperature coefficient	± 0.1 % / 10 K	Protection class	IP 68
Temperature range	- 10...+ 90 °C	Electrical connection	PG gland with 6 m cable
Input resistance	350 Ω		

Order code (example):



Options:

- H14 = right angle cable connection
- Junction box

Scope of delivery:

- Force Measuring Block
- Straight electrical connection
- 6 m cable
- 5 m cable protective tube without junction box

FMS Electronic Units

EMGZ 306A



ExMGZ 100/200



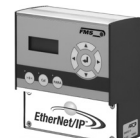
Series 309



Series 470



Series 321.EIP EtherNet/IP



FMS electronic units are available in many different versions as measuring amplifiers in analog or digital form or as direct fieldbus connections (PROFIBUS®, Ethernet, CanOpen, etc.).

They can be fitted on rails and in racks or onto control panels or walls. They are also available in waterproof and vibration-free versions. All FMS electronic units have been specially developed for **easy fitting and operating.**

FMS electronic units benefit from the advantages of hybrid technology, SMD construction and high-end microprocessor technology for web tension measurement. Each electronic unit provides **output signals of 0...10 V / ±10 V and 0...20 mA / 4...20 mA and has an integrated signal-filtering system.**

FMS also offer **an ATEX certified intrinsically safe barrier** (ExMGZ 100/200) for the use in explosion proof environment.

World Headquarters:

FMS Force Measuring Systems AG
 Aspstrasse 6
 8154 Oberglatt (Switzerland)
 Phone + 41 44 852 80 80
 Fax + 41 44 850 60 06
 info@fms-technology.com

FMS USA, Inc.
 2155 Stonington Avenue
 Suite 119
 Hoffman Estates, IL 60169
 Phone + 1 847 519 4400
 Fax + 1 847 519 4401
 fmsusa@fms-technology.com

FMS UK
 Highfield, Atch Lench Road
 Church Lench
 Evesham WR 11 4UG
 Phone + 44 1386 871023
 Fax + 44 1386 871021
 fmsuk@fms-technology.com

FMS Italy
 Via Baranzate 67
 20026 Novate Milanese
 Phone + 39 02 39487035
 Fax + 39 02 39487035
 fmsit@fms-technology.com