

SMGZ Force Measuring Blocks for Metal Strips

Overload protection, 10 times nominal measuring force

No recalibration required

Nominal forces of 2 – 100 kN

Forces suitable for all uses

Stainless steel force sensors

Permanently corrosion-resistant

24 months guarantee

High level of operational safety



● SMGZ

SMGZ force measuring blocks are extremely durable, accurate and reliable. Tension values of down to 5% of the nominal force can be measured with a high level of accuracy. The combination of stainless steel and mechanical overload protection makes SMGZ force measuring blocks ideal sensors for all tension measuring applications. Sensors are used in difficult ambient conditions, e.g. cooling water, rolling oils, high temperatures, humidity. They can be used in virtually any process, but are typically used in cold rolling plants, steel and aluminium refining and processing plants. SMGZ 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. A Wheatstone full-bridge circuit, hermetically sealed and encapsulated and containing four foil-based strain gauges, measures the actual strip tension. This measuring signal is output to an FMS measuring amplifier for further processing.

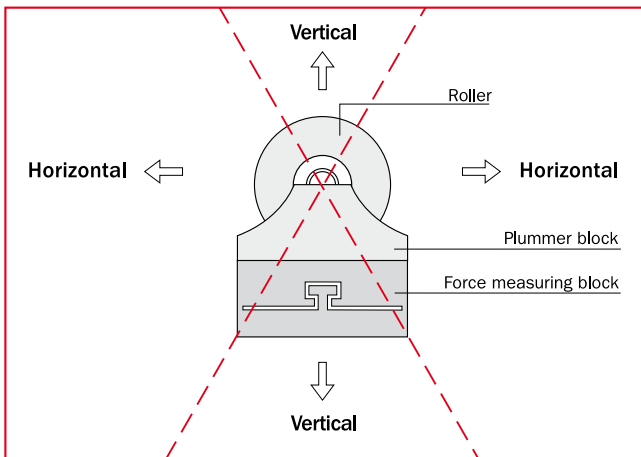
Functional Description

The measuring force is applied to the force sensor via the plummer 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 SMGZ force measuring blocks provide an extremely accurate

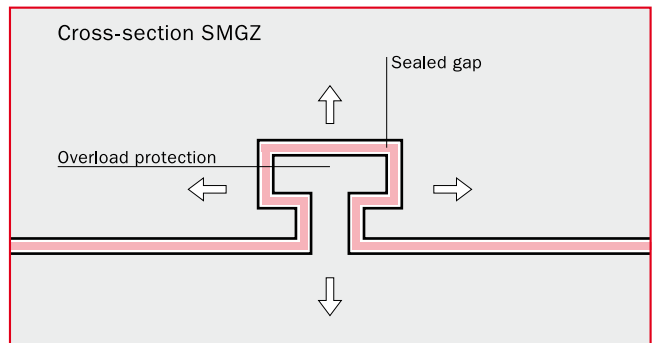
and precise web tension measurement even with small wrap angles and heavy rollers.

• Horizontal or vertical force measuring block



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

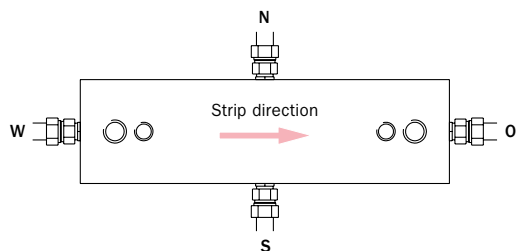
• Integrated mechanical overload protection



All SMGZ force measuring blocks have an integrated mechanical overload protection system. The SMGZ 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 safety. No recalibration is required because of this mechanical overload protection.

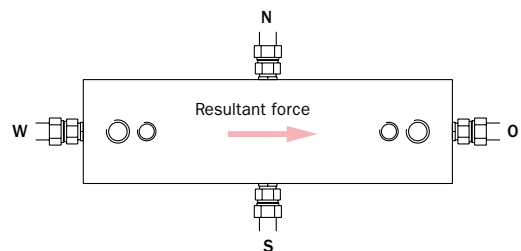
• Electrical connections for horizontal or vertical design

SMGZ 100-500 Vertical



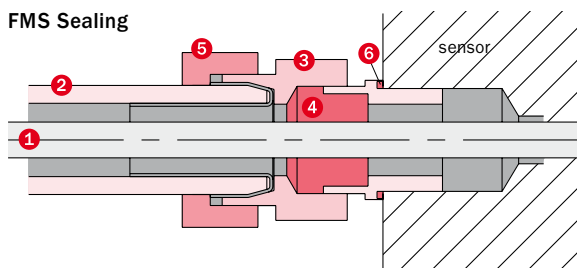
Standard: W (Can also be used as O version if both force sensors do have same running direction.)
Option: N, S, O

SMGZ 100-500 Horizontal



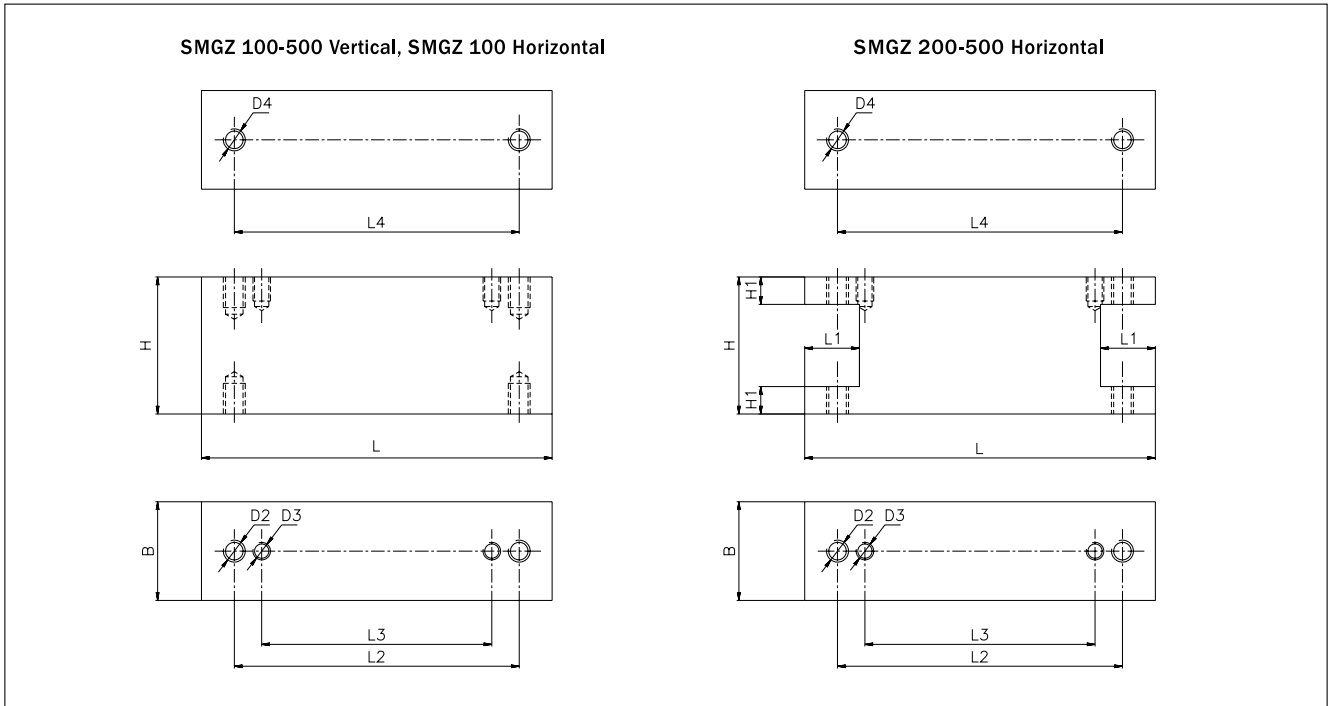
Standard: N, S
Option: O, W (on request only)

FMS Sealing



- 1 Wire
- 2 Protective tube
- 3 Seal PG gland
- 4 PG seal on force sensor
- 5 Connecting nut protective sheat
- 6 Seal

SMGZ • Design and dimensions



SMGZ • Plummer block / Nominal force

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

SMGZ • Dimensions

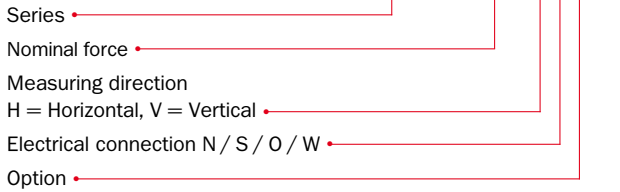
SMGZ Series	Dimensions in mm			Attachment for adapter plate		Lower attachment L4 x D4	Stiffness at F _{nom.} ca. [mm]		Weight max. kg
	L	B	H	L2 x D2	L3 x D3		< 10 kN	≥ 10 kN	
SMGZ100	230	90	125	170 x M12	130 x M12	170 x M16	0,5	0,2	20
SMGZ200	320	90	125	260 x M20	210 x M16	260 x M20	0,5	0,2	28
SMGZ300	380	110	125	320 x M24		320 x M24	0,5	0,2	41
SMGZ400.350	450	130	125	350 x M24		350 x M24	0,5	0,2	57
SMGZ400.390	450	130	125	390 x M24		390 x M24	0,5	0,2	57
SMGZ500	560	170	150	470 x M30		470 x M30	0,5	0,2	111

SMGZ • 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 67
Temperature range	- 10...+ 90 °C	Electrical connection	PG gland with 6 m cable (VG 95218)
Input resistance	350 Ω		

Order code (example):

SMGZ200.40K.H.N.H14



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



Baureihe 309



Baureihe 470



Baureihe 600



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.

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