

SMGZ Series/UMGZ Series Force Measuring Blocks

10 times overload protection

No recalibration required

20:1 force measuring range

Accuracy class 0.5%

Nominal forces of 100 - 22,000 lbs

Sizes available for every application

Stainless steel sensor

Corrosion resistant, ultra durable



● **SMGZ Series**

SMGZ Series Force Measuring Blocks are extremely durable, accurate, reliable and waterproof. Tension values of down to 5% of the rated nominal force of the sensor can be consistently 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 in difficult ambient conditions. (i.e. cooling water, rolling oils, high temperatures, humidity) They can be used in virtually any process. SMGZ Force Measuring Blocks can be combined with all FMS electronic units.

● **UMGZ Series**

UMGZ Force Measuring Blocks are extremely durable, accurate and reliable. Tension values of down to 5 % of the rated nominal force can be consistently measured with a high level of accuracy. The combination of stainless steel and mechanical overload protection makes UMGZ Force Measuring Blocks ideal sensors for all tension measuring applications. These sensors can be used in all applications where easy access to the bearing is vital.

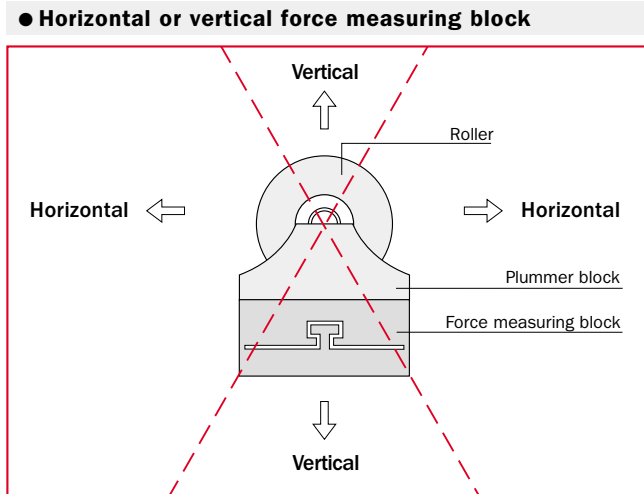
● **Functional description**

Together with the plummer block, the SMGZ and UMGZ Force Measuring Blocks join together the measuring sensor and bearing. The plummer block is mounted on the force sensor. This structure ensures that bearings and rollers can be easily replaced. A horizontal or vertical measuring direction (depending on the type of force measuring block selected) guarantees an accurate measurement of the resulting measuring force. The red spot on the force sensor indicates the measuring direction. The SMGZ and UMGZ Force Measuring Blocks provide an extremely accurate and precise tension measurement even with small wrap angles and heavy rollers.

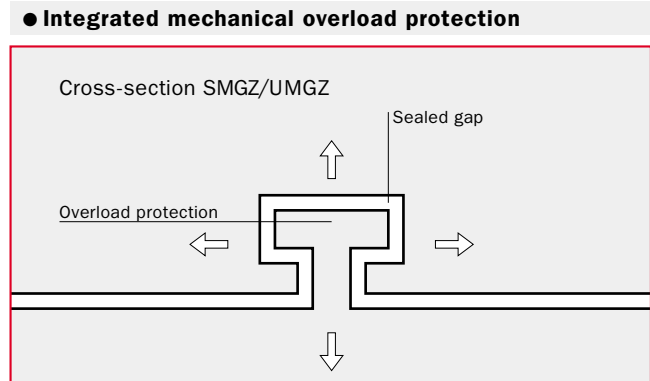
Measuring principle

The measuring force is applied to the force sensor via the plummer block. A full Wheatstone Bridge configuration, containing four foil-based strain gauges, measures the material tension. In the SMGZ Series, the full Wheatstone Bridge is

hermetically sealed and encapsulated to protect it from harsh environments. This measuring signal is output to an FMS measuring amplifier or tension controller for further processing.



Depending on the resulting measuring force direction, a horizontal or vertical measuring SMGZ/UMGZ Force Measuring Block is selected.

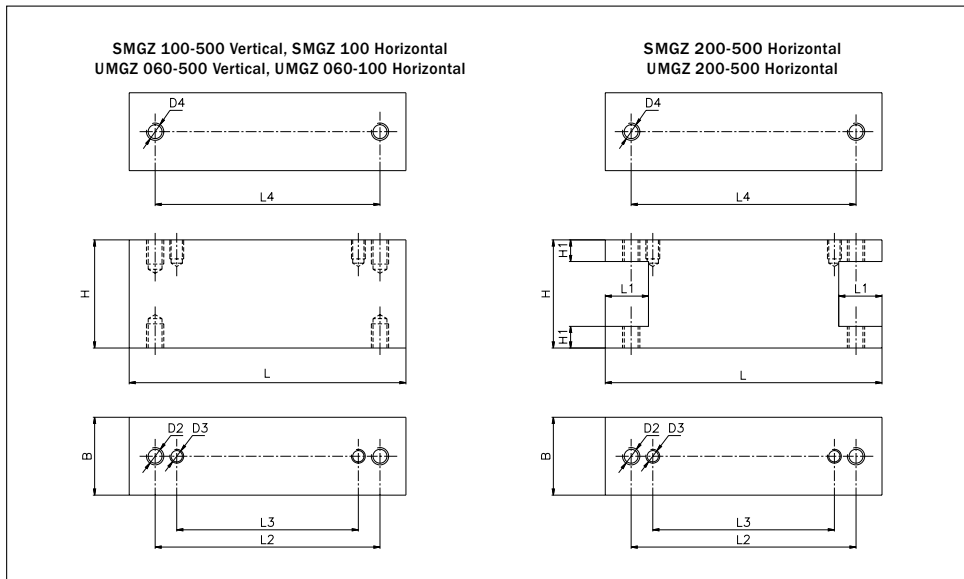


All SMGZ/UMGZ Force Measuring Blocks have an integrated mechanical overload protection system. The SMGZ/UMGZ Force Measuring Blocks move to the mechanical end stop at about 120 % of the nominal measuring force. This design ensures the highest possible level of accuracy and functional stability. No recalibration is required because of this mechanical overload protection.

| SMGZ/UMGZ • Technical Data | |
|---------------------------------|---|
| Sensitivity | 1.8m V / V |
| Tolerance of sensitivity | < ± 0.2 % |
| Accuracy class | ± 0.5 % |
| Temperature coefficient | ± 0.1 % / 10 K [0.0055 % / °F] |
| Temperature range | SMGZ -10... + 90 °C [14 °F...194 °F] UMGZ -10... + 60 °C [14 °F...140 °F] |
| Input resistance | 350 Ω |
| Supply voltage | 1...12 VDC |
| Overload protection | 10 times rated nominal force |
| Sensor material | Stainless steel |
| Protection class | SMGZ IP 67 UMGZ IP 42 |
| Electrical connection | SMGZ PG gland with 10 m [32'] cable (VG 95218) UMGZ Amphenol connector, PG glands are optional |

| SMGZ/UMGZ • Nominal Force | | |
|-------------------------------|-------------------------------|---|
| FMS Order Code SMGZ Series | FMS Order Code UMGZ Series | Nominal Force kN [lbs] |
| | UMGZ 060 | 0.5, 1, 2 [112, 224, 449] |
| | UMGZ 080 | 0.5, 1, 2, 5 [112, 224, 449, 1124] |
| SMGZ 100 | UMGZ 100 | 0.5, 1, 2, 5, 10, 20 [112, 224, 449, 1,124, 2248, 4496] |
| SMGZ 200 | UMGZ 200 | 2, 5, 10, 20, 30, 40 [449, 1124, 2248, 4496, 6744, 8992] |
| SMGZ 300 | UMGZ 300 | 5, 10, 20, 50 [1124, 2248, 4496, 11,241] |
| SMGZ 400.350 | UMGZ 400.350 | 10, 20, 50, 100 [2248, 4496, 11,241, 22,482] |
| SMGZ 400.390 | UMGZ 400.390 | 10, 20, 50, 100 [2248, 4496, 11,241, 22,482] |
| SMGZ 500 | UMGZ 500 | 10, 20, 50, 100 [2248, 4496, 11,241, 22,482] |

SMGZ/UMGZ • Design and dimensions



SMGZ/UMGZ • Dimensions

| FMS Order Code SMGZ Series | FMS Order Code UMGZ Series | Dimensions in mm [inches] | | | | | Mounting Holes for Adapter Plate or Plummer Block | | Lower Attachment L4XD4 | Stiffness at F _{nom.} ca. mm [inches] | | Weight maximum | |
|-------------------------------|-------------------------------|---------------------------|--------------|--------------|--------------|--------------|---|---------------------|---------------------------|--|-----------------------|----------------|-----|
| | | L | B | H | L1 | H1 | L2XD2 | L3XD3 | | < 10kN [2,200 lbs] | ≥ 10kN [2,200 lbs] | kg | lbs |
| | UMGZ 060 | 140 [5.5] | 60 [2.3] | 90 [3.5] | – | 15 [0.59] | 100 X M10 [3.94] | | 100 X M10 [3.94] | 0.5 [.02] | 0.2 [.008] | 5.5 | 12 |
| | UMGZ 080 | 190 [7.5] | 60 [2.3] | 90 [3.5] | – | 15 [0.59] | 131 X M12 [5.16] | | 131 X M12 [5.16] | 0.5 [.02] | 0.2 [.008] | 8 | 18 |
| SMGZ100 | UMGZ100 | 230 [9.1] | 90 [3.5] | 125 [4.9] | – | 25 [0.98] | 170 X M12 [6.69] | 130 X M12 [5.12] | 170 X M16 [6.69] | 0.5 [.02] | 0.2 [.008] | 20 | 44 |
| SMGZ200 | UMGZ200 | 320 [12.6] | 90 [3.5] | 125 [4.9] | 45 [1.77] | 25 [0.98] | 260 X M20 [10.24] | 210 X M16 [8.27] | 260 X M20 [10.24] | 0.5 [.02] | 0.2 [.008] | 28 | 62 |
| SMGZ300 | UMGZ300 | 380 [14.9] | 110 [4.3] | 125 [4.9] | 55 [2.17] | 25 [0.98] | 320 X M24 [12.6] | | 320 X M24 [12.6] | 0.5 [.02] | 0.2 [.008] | 41 | 90 |
| SMGZ400.350 | UMGZ400.350 | 450 [17.7] | 130 [5.1] | 125 [4.9] | 65 [2.56] | 25 [0.98] | 350 X M24 [13.78] | | 350 X M24 [13.78] | 0.5 [.02] | 0.2 [.008] | 57 | 125 |
| SMGZ400.390 | UMGZ400.390 | 450 [17.7] | 130 [5.1] | 125 [4.9] | 65 [2.56] | 25 [0.98] | 390 X M24 [15.35] | | 390 X M24 [15.35] | 0.5 [.02] | 0.2 [.008] | 57 | 125 |
| SMGZ500 | UMGZ500 | 560 [22.4] | 170 [6.7] | 150 [5.9] | 90 [3.54] | 30 [1.18] | 470 X M30 [18.5] | | 470 X M30 [18.5] | 0.5 [.02] | 0.2 [.008] | 111 | 244 |

SMGZ ● Electrical connections for vertical or horizontal design

SMGZ 100-500 Vertical

Connector position
Standard: W (can also be used as O version if both force sensors have the same running direction.)
Option: N, S and O

SMGZ 100-500 Horizontal

Connector position
Standard: N, S
Option: O, W

UMGZ ● Electrical connections for vertical or horizontal design

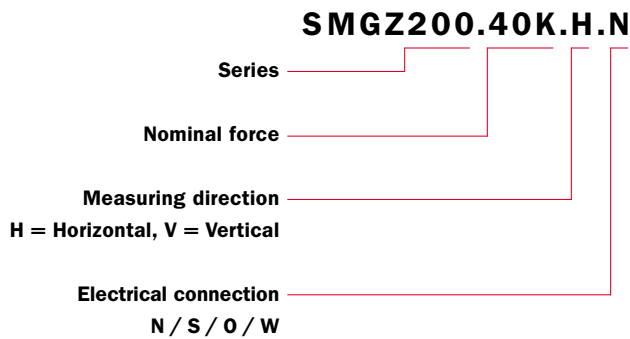
UMGZ 060-500 Vertical

Connector position
Standard: W (vertical measuring blocks can be used for either web direction, however, both left and right blocks must point in the same direction.)

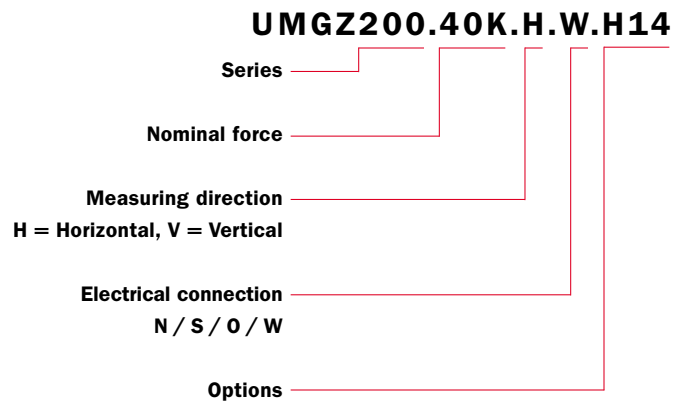
UMGZ 060-500 Horizontal

Connector position
Standard: W
Option: N, S and O

SMGZ Series Order code:



UMGZ Series Order code:



SMGZ Series Options:

- protective tube 3/8" without connector box
- protective tube 3/8" with connector box
- Connector box with screw terminals

UMGZ Series Options:

- H14** = right angle connector
- H16** = temperature range up to 150°C [300°F]
- H21** = PG gland with 10 m PVC cable replaces plug

World Headquarters:

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

FMS USA, Inc.
925 East Rand Road · Suite 207
Arlington Heights, IL 60004
Phone 847 392 7872
Fax 847 392 7873
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