UMGZ Force Measuring Blocks

Overload protection, 10 times nominal measuring force

No recalibration required

Nominal forces of 0,5 – 100 kN

Forces suitable for all applications

Stainless steel force sensors

Permanently corrosion-resistant

- **UMGZ**

UMGZ force measuring blocks are extremely durable, accurate and reliable. Tension values of down to 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 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 (for greasing purposes, to change the bearing or the roller frequently) and where the ambient conditions are not extreme.

- **Measurement principle**

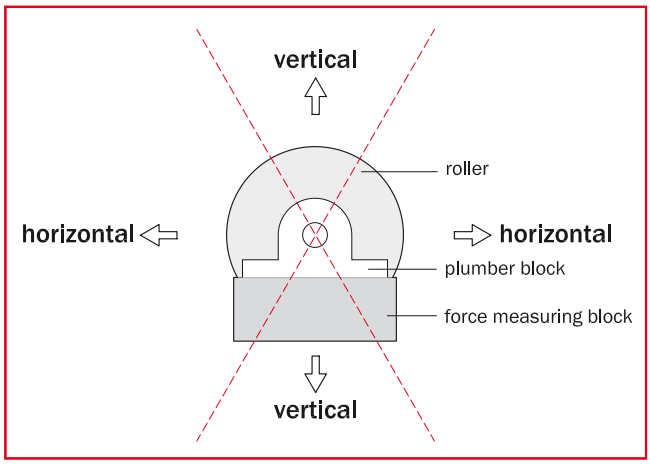
The measuring force is applied to the force sensor via the plummer block. A Wheatstone full-bridge circuit, containing four foil-based strain gauges, measures the current strip tension. This measuring signal is output to an FMS measuring amplifier for further processing.

Functional description

The measuring force is applied to the force sensor via plummer block.
A full Wheatstone Bridge configuration, containing four foilbased strain gaugesm measures the material tension.

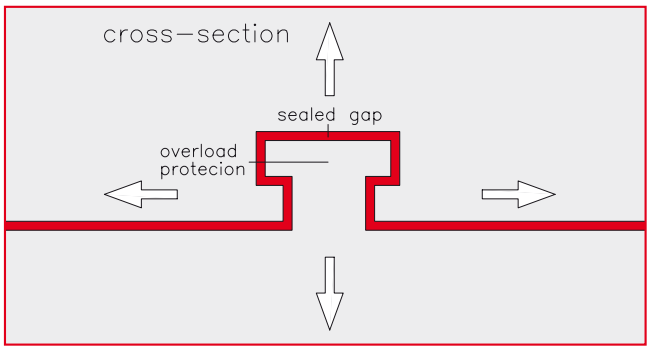
A horizontal or vertical measuring direction (depending on the type of force measuring block) guarantees an accurate measurement of the resulting measuring force. The red point on the force sensor indicates the measuring direction. The UMGZ force measuring blocks provide an extremely accurate and precise 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 UMGZ force measuring block is selected.

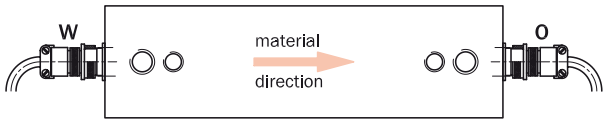
● Integrated mechanical overload protection



All UMGZ force measuring blocks have an integrated mechanical overload protection system. The UMGZ 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 vertical or horizontal design

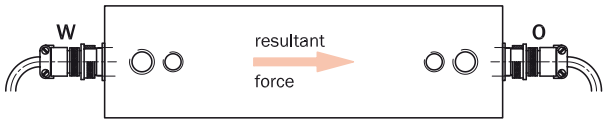
UMGZ060 - 500 Vertical



Standard: **W**

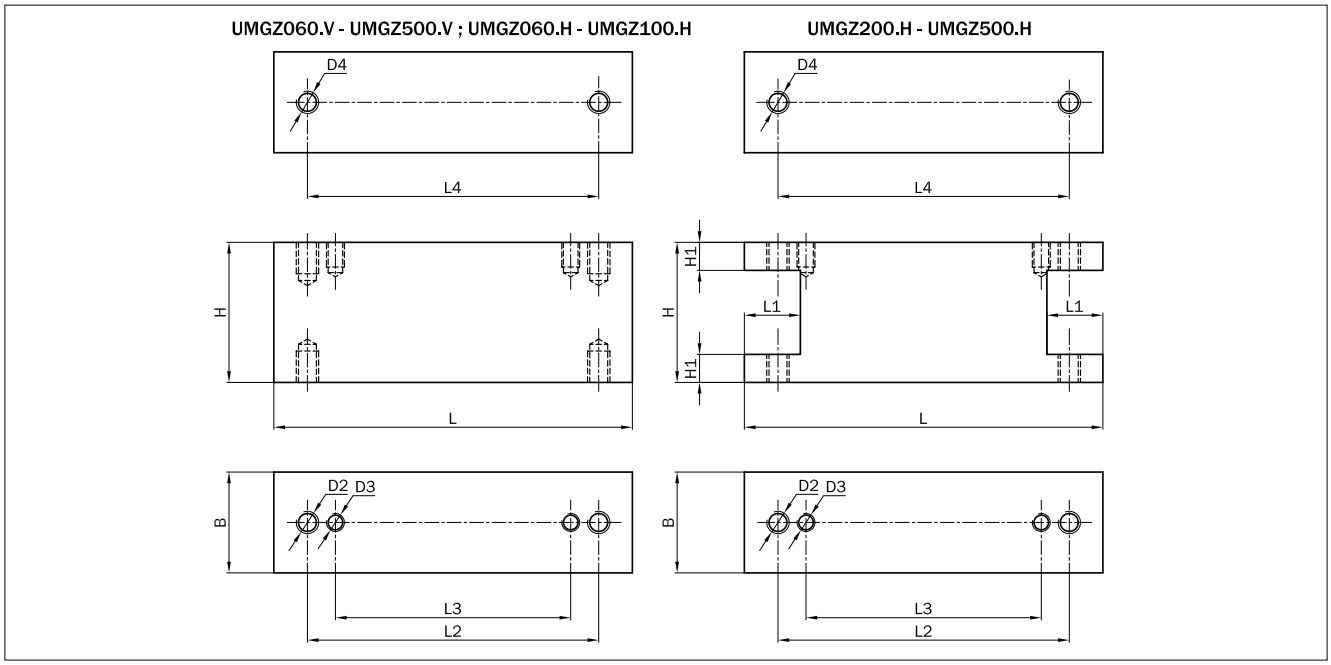
W can also be used as O version if both sensors have the same running direction

UMGZ060 - 500 Horizontal



Standard: **W**
Option: **O**

UMGZ ● Design and dimensions



UMGZ ● Plummer block / Nominal force

Mounting holes for plummer block	**Shaft diameter** d ø	**Nominal force** [kN]	**UMGZ** Series
100 x M10	12 – 25	0,5, 1, 2	**UMGZ 060**
131 x M12	30 – 40	0,5, 1, 2, 5	**UMGZ 080**
130 x M12 or 170 x M12	20 – 50	0,5, 1, 2, 5, 10, 20	**UMGZ 100**
210 x M16 or 260 x M20	40 – 85	2, 5, 10, 20, 30, 40	**UMGZ 200**
320 x M24	75 –100	5, 10, 20, 50	**UMGZ 300**
350 x M24	85 – 120	10, 20, 50, 100	**UMGZ 400.350**
390 x M24	100 – 110	10, 20, 50, 100	**UMGZ 400.390**
470 x M30	110 – 160	10, 20, 50, 100	**UMGZ 500**

UMGZ ● Dimensions

UMGZ Series	**Dimensions in mm** L	B	H	**Attachment for adapter plate** L2 x D2	L3 x D3	**Lower attachment** L4 x D4	**Stiffness at $F_{nom.}$ ca. [mm]** < 10 kN	≥ 10 kN	**Weight** max. kg
UMGZ 060	140	60	90	100 x M10		100 x M10	0,5	0,2	5,5
UMGZ 080	190	60	90	131 x M12		131 x M12	0,5	0,2	8
UMGZ100	230	90	125	170 x M12	130 x M12	170 x M16	0,5	0,2	20
UMGZ200	320	90	125	260 x M20	210 x M16	260 x M20	0,5	0,2	28
UMGZ300	380	110	125	320 x M24		320 x M24	0,5	0,2	41
UMGZ400.350	450	130	125	350 x M24		390 x M24	0,5	0,2	57
UMGZ400.390	450	130	125	390 x M24		390 x M24	0,5	0,2	57
UMGZ500	560	170	150	470 x M30		470 x M30	0,5	0,2	111

UMGZ ● Technical Data

Sensitivity	1.8 m V / V
Tolerance of sensitivity	< ± 0.2 %
Accuracy class	± 0.5 % ($F_{nominal}$)
Temperature coefficient	± 0.1 % / 10 K
Temperature range	–10... + 60 °C
Input resistance	350 Ω

Supply voltage	1...12 VDC
Maximum overload	> 10 times the rated nominal force
Material for sensor	Stainless steel
Protection class	IP 42
Electrical connection	Connector amphenol, PG glands as an option

Order code (example):

UMGZ200.40K.H.W.H14

- Series
- Nominal force
- Measuring direction
  H = Horizontal, V = Vertical
- Electrical connection O / W
- Options

Options:

H 14 = Right angle connector

H 16 = Temperature range of sensor with PG-gland up to 150 °C. Connectors up to 120 °C

H 21 = PG gland with 10 m PVC cable

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.*

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