# Force Measurement Bolt KMB-A

**Scope of Supply**
Force sensor with 5m cable (PVC) and integrated amplifier with voltage and current output

**Output Signal**

Voltage output:
**U:** ±100% ≙ 0 - ±10V

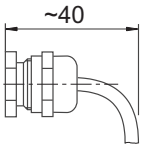
current output:
**C:** 0-100% ≙ 4 - 20mA (standard)
for exclusively positive loads


Picture similar

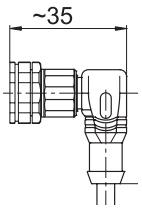
**Variants/ Connectors:**

current output at negative preload
**V1:** -100…0...+100% ≙ 4…12…20mA

Variant T




Variant S2




**Accessories**

Spring cotter for axial lock

Fit in commercially available standard fork heads

**Ordering Example**

**KMB-AC20-10k-T**

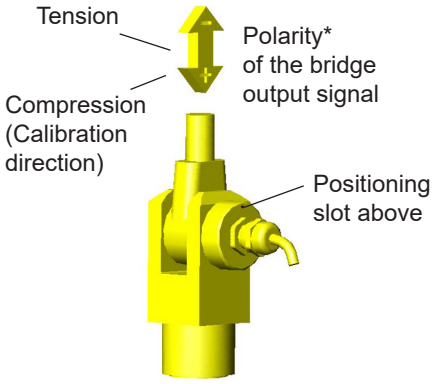
- Typ
- Output signal
- Diameter
- Nominal force
- Variants

**Special Features**

- With integrated amplifier
- Simple mounting even in confined spaces
- Easy retrofitted into existing machinery
- Measuring range from 6,3 to 63 kN

The force measurement bolt KMB-A was specifically developed to capture tension and compression forces in machine parts equipped with standard fork heads, e.g. in conjunction with pneumatic and hydraulic cylinders.

The KMB-A can be used in all applications where such fork heads are either already available or can be easily retrofitted. Simple and cost effective mounting of the KMB-A make it especially suitable for up-grading existing equipment.




***Attention!***

**Installation instruction**

*Align positioning slot according to action line of the measuring direction. In order to obtain reverse polarity turn the KMB by 180° (positioning slot is at the bottom).

Select voltage output U or current output with variant V1 for force sensors with negative preload, as variant C can process positive loads only.

A potential equalization cable with sufficient cross section has to be provided, when mounting the amplifier to grounded machine parts.

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# KMB-A

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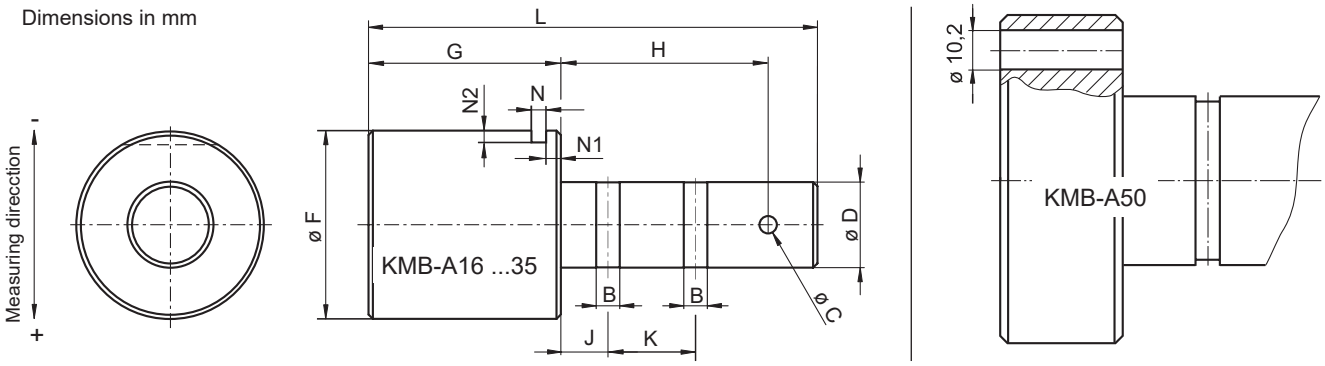
| Technical Data Sensor | Values (%) based on nominal force | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal force [kN] | ø 16 | | ø 20 | | | ø 35 | | | | | ø50 | | |
| | 6,3 | 10 | 6,3 | 10 | 16 | 10 | 16 | 25 | 40 | 63 | 100 | 160 | 250 |
| Max. operating force | 160 % | | | | | | | | | | | | |
| Absolute max. force | 300 % | | | | | | | | | | | | |
| Lateral force | 100 % | | | | | | | | | | | | |
| Fracture force | 400 % | | | | | | | | | | | | |
| Combined error | 1 % | | | | | | | | | | | | |
| Nominal temperature range | +10 …+60 °C | | | | | | | | | | | | |
| Operational temperature range | -10 …+70 °C (applications with fix mounted cable) | | | | | | | | | | | | |
| Connecting cable standard | PVC, grey, 4 x 0,34 mm² | | | | | | | | | | | | |
| Weight | <0,5 kg | | <0,75 kg | | | <2 kg | | | | | 3,7 kg | | |
| Standard protection class | IP 67 | | | | | | | | | | | | |

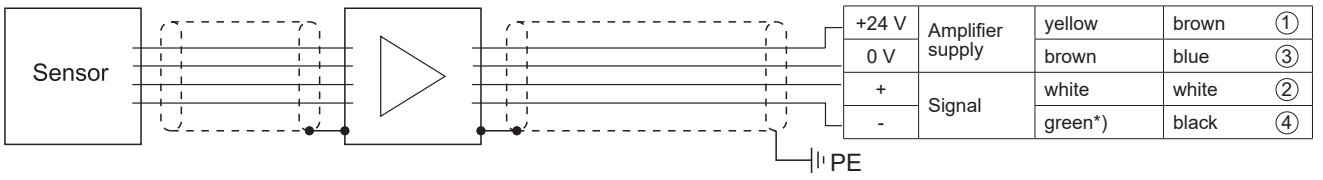
Dimensions in mm




Standard: Calibration in positiv measuring range, KMB12 ...KMB35 are calibrated to tension, KMB50 to compression load

| KMB-A | ø D | ø F | G | N | N1 | N2 | C | H | L | J | K | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 16h7 | 40 | 55 | 4 | 4 | 3 | 3 | 35,5 | 95 | 8 | 16 | 6 |
| **20** | 20f7 | 40 | 55 | 4 | 4 | 4 | 4 | 42 | 103 | 9,75 | 20,5 | 5,5 |
| **35** | 35g6 | 45 | 55 | 4 | 4 | 4 | 5 | 77,5 | 140 | 17,5 | 35 | 8 |
| **50** | 50g6 | 100 | 37 | - | - | - | 6 | 101 | 145 | 23 | 50 | 9 |

| Technical Data Amplifier | | |
|---|---|---|
| Signal output | Variant U | Voltage ± 10 V, min. load resistance 5 kΩ |
| | Variant C / CV1 | Current 4...20 mA, max. load resistance 1 kΩ |
| | Band width | 0... 1 kHz |
| | Signal rising time | < 1 ms |
| Power supply | Voltage | 24 V DC, 14... 27 V |
| | Typ. current consumption | appprox. 13 mA |




| | | Variant T/S1 | Variant S2/N1/N2 |
|---|---|---|---|
| +24 V | Amplifier supply | yellow | brown ① |
| 0 V | | brown | blue ③ |
| + | Signal | white | white ② |
| - | | green*) | black ④ |

*) With variant U this line is not in use. The reference potential of the signal is 0 V of the amplifier supply



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