

RTB

Ring torsion load cell

- Legal-for-trade design according to OIML
- High accuracy, even for very small application areas (for legal-for-trade applications up to at least 15 %)
- Low power consumption due to high input impedance of 1100 Ω
- ATEX/IECEx approval for category 1GD (intrinsically safe to operate) or 3GD (not intrinsically safe)
- Protection class IP68



Application

The load cell as transducer converts the mechanical input variable force proportionally into the electronic output variable voltage.

The specific model of the ring torsion load cell offers the user specific advantages:

- The extremely small frame size simplifies the use in almost all weighing device applications
- The robust construction allows problem-free transport, installation and operation, also under rough ambient conditions (disturbance forces, temperature)

Construction

- Hermetically sealed encapsulation through laser welding and glass-metal implementation (IP68)
- Corrosion protection through the use of stainless steel

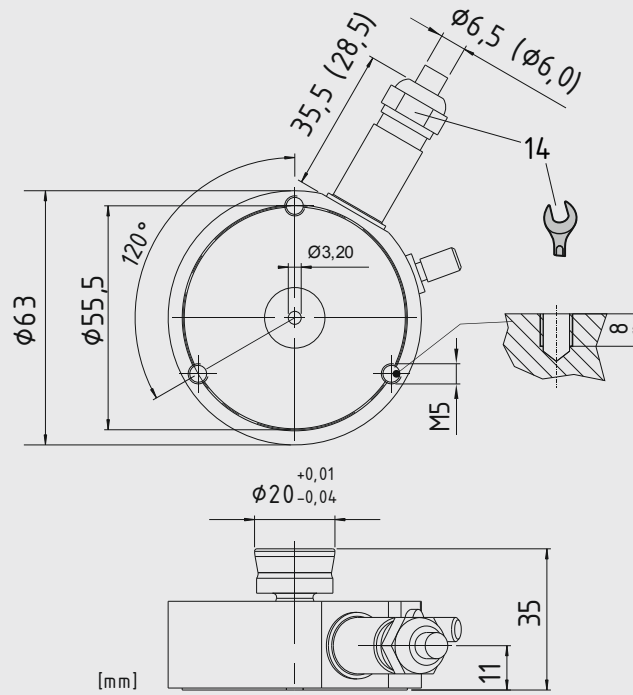
- All electrical components are located inside the load cell and thus are optimally protected
- The high quality and robust connecting cable is guided radially into the load cell
- Mechanically compatible with the RTK type series

Function

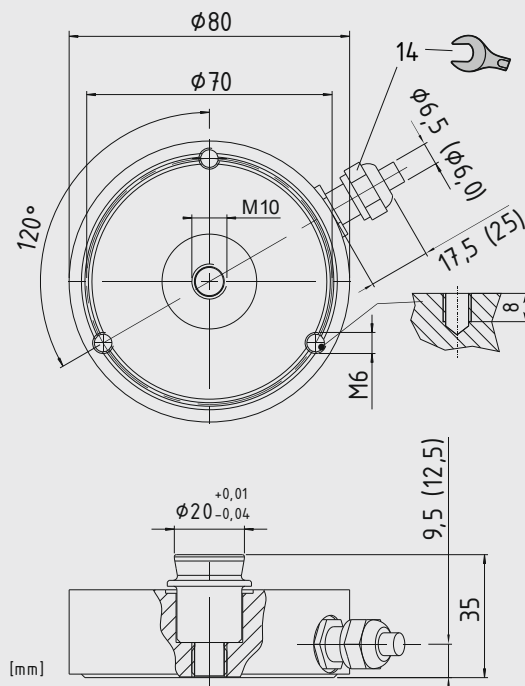
- High reproducibility
- High long-term stability and therefore consistently high accuracy permanently
- Extremely small measured value influence as a result of lateral forces
- High functional safety, even with frequently unavoidable impact loads and constraining forces, as well as with electrical interferences
- Torque-free force input/output as a result of the direct, vertical power train

Dimensions

RTB 0.13 t



RTB 0.25 t / 0.5 t



Technical Data

| Nominal load | E _{max} | 0.13 t | 0.25 t | 0.5 t | — | |
|--|-------------------|--|--|--|------------------|---|
| Accuracy class | | C3 | C3 | C3 | C5 | Ref |
| Nominal characteristic value | C _n | 1 mV/V ±0.1 mV/V | 1.75 mV/V ±0.2 mV/V | 2 mV/V ±0.1 mV/V | | — |
| Combined error | F _{comb} | ±0.023 % | ±0.023 % | ±0.0140 % | | C _n |
| Dead load return after load (30 min) | F _{dr} | ±0.0167 % | ±0.0167 % | ±0.0083 % | | C _n |
| Creepage under load (30 min) | F _{cr} | ±0.012 % | ±0.0245 % | ±0.0123 % | | C _n , B _{tn} |
| Hysteresis | | ±0.017 % | ±0.0167 % | ±0.0083 % | | C _n , B _{tn} |
| Temperature coefficient of the zero signal per 10 K | TK ₀ | ±0.008 % — | ±0.014 % ±0.007 % | ±0.009 % | | C _n , B _{tn} Option MR |
| Temperature coefficient of the characteristic value per 10 K | TK _c | ±0.008 % | ±0.01 % | ±0.005 % | | C _n , B _{tn} |
| Max. permissible number of legal-for-trade scale intervals | n _{LC} | 3000 | 3000 | | 5000 | — |
| Smallest scale interval | V _{min} | E _{max} /17500 — | E _{max} /10000 E _{max} /20000 | E _{max} /17500 | | Standard Option MR |
| Minimum application range | B _{amin} | 17 % — | 30 % 15 % | 40 % | | E _{max} Option MR |
| max. application range | B _{amax} | 100 % | | | E _{max} | |
| Maximum capacity * | L _I | 150 % | | | E _{max} | |
| Max. lateral load ** | L _q | 20 % | | | E _{max} | |
| Input resistance | R _e | 1260 Ω ±100 Ω | 1100 Ω ±100 Ω | 1100 Ω ±100 Ω | | — |
| Output resistance | R _a | 1020 Ω ±0.5 Ω | 1025 Ω ±25 Ω | 1025 Ω ±25 Ω | | — |
| Zero Signal | S ₀ | 1 % | 1.5 % | 1 % | | C _n |
| Supply voltage | U _s | max. 30 V (recommended: 5 V – 15 V) | | | — | |
| Nominal temperature | B _{tn} | -10 °C - +40 °C | | | — | |
| Operating temperature range | B _{tu} | -30 °C - +70 °C | | -35 °C - +70 °C | | — |
| Storage temperature range | — | -50 °C - +90 °C | | -50 °C - +90 °C | | — |
| Protection class | — | IP68 | | | — | |
| Cable Specification | — | Length of cable 5 m, Shield insulated by the housing (0.13 t), and connected with the housing (0.25 t – 0.50 t) | | | — | |
| Connection assignment | — | Input + 82: pink / Output + 28: brown | | Input - 81: gray / Output - 27: white | | — |
| Material | — | Stainless steel | | | — | |
| Corrosion protection | — | See resistance table DDP8 483 | | | — | |
| Recommended tightening torque for the fastening bolts | — | 8 Nm | 12 – 14 Nm | | — | |
| ATEX approval | — | Only operate intrinsically safely: | | II 1G Ex ia IIC T4 Ga II 1D Ex ia IIIC T73°C Da | | — |
| | | Not operated intrinsically safely: | | II 3G Ex nA IIC T4 Gc II 3D Ex tc IIIC T63°C DC | | — |

* Permissible vibrational loading as defined by DIN 50100: 70 % E_{max}. Peak loading values may **not** exceed E_{max}.

** In combination with elastomer bearings, SEM must be observed that the reset force of the elastomer bearings already represents a transverse force.

Order Numbers

| Design | Accuracy class | |
|---|----------------|-------------|
| | C3 | C5 |
| [t] | | |
| 0.13 | V041085.B01 | — |
| 0.25 | V041086.B01 | — |
| 0.50 | V041087.B01 | V041087.B05 |
| 0.25 MR | V041086.B07 | — |
| 0.50 MR | V041087.B07 | — |
| Order numbers model ATEX/IECEx II 1G Ex ia IIC T4 Ga/ II 1D Ex ia IIIC T73°C Da/ II 3G Ex nA IIC T4 Gc/ II 3D Ex tc IIIC T63°C DC* | | |
| 0.13 | V041085.B11 | — |
| 0.25 | V041086.B11 | — |
| 0.50 | V041087.B11 | V041087.B15 |

***Which range, 1GD or 3GD, the load cell is used for, must be marked on the identification plate. For category 1GD or 2GD, the load cell must be connected intrinsically safe.**

Installation accessories:

SENSiQ™ Secure Mount SSM, SENSiQ™ Elastomer Mount SEM