

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).

Design

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



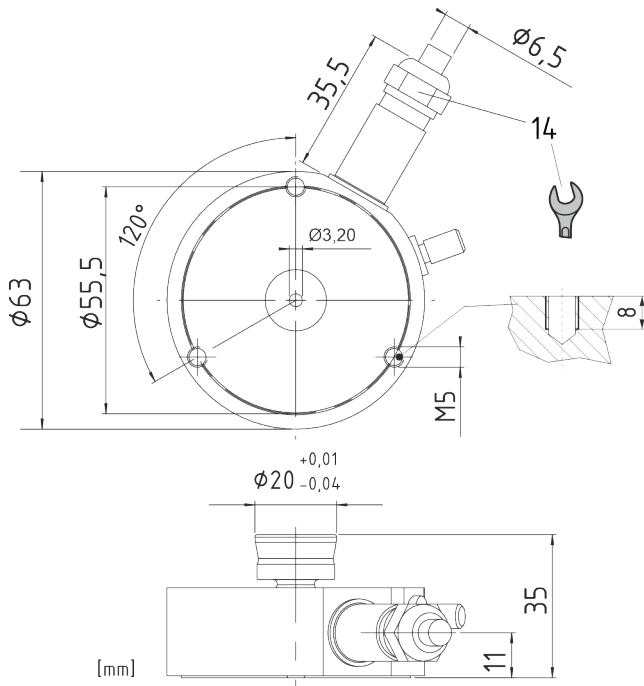
- All electrical components are located inside the load cell and thus are optimally protected.
- The high quality and robust connecting cable is guided radially into the load cell.
- Mechanically compatible with the RTK type series

Function

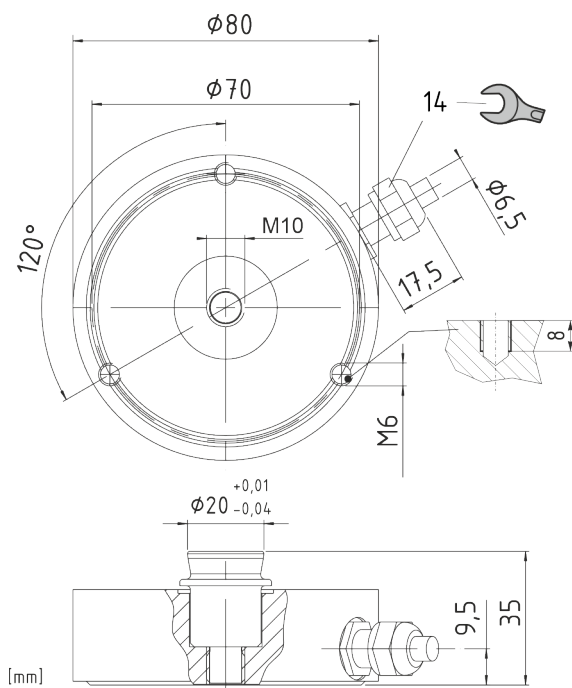
- High reproducibility
- High long-term stability and therefore consistently high accuracy permanently
- Extremely small measured value influence as a result of lateral forces
- High functional safety, even with frequently unavoidable impact loads and constraining forces, as well as with electrical interferences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

Dimension

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	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	2 mV/V ±0.1 mV/V	–
Compound error	F _{comb}	±0.023 %	±0.023 %		±0.014 %	C _n
Return to zero signal 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	TK0	±0.008 %	±0.014 %		±0.009 %	C _n , B _{tn}
		–	±0.007 %		±0.009 %	Option MR
Temperature coefficient of the characteristic value per 10 K	TK _c	±0.008 %	±0.01 %		±0.005 %	C _n , B _{tn}
Max. allowed number of verifiable division values	nLC	3000	3000		5000	–
Smallest scale interval	V _{min}	E _{max} /17500	E _{max} /10000		E _{max} /17500	Standard
		–	E _{max} /20000		E _{max} /17500	Option MR
Minimum application range	B _{amin}	17 %	30 %		40 %	E _{max}
		–	15 %			Option MR
Max. application range	B _{amax}		100 %			E _{max}
Maximum capacity *	LI		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	1100 Ω ±100 Ω	–
Output resistance	R _a	1020 Ω ±0.5 Ω	1025 Ω ±25 Ω	1025 Ω ±25 Ω	1025 Ω ±25 Ω	–
Zero Signal	S0	1 %	1.5 %	1 %	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	-35 °C ... +70 °C	-35 °C ... +70 °C	–
Storage temperature range	–	-50 °C ... +90 °C				–
Type of protection	–	IP68				–
Cable specification	–	Cable length 5 m, shield insulated from housing (0.13 t) or connected to housing (0.25 ...0.50 t)				–
Connection assignment	–	Input +82: pink / Input -81: gray Output +28: brown / Output -27: white				–
Material	–	Stainless steel				–
Corrosion protection	–	see resistance table DDP8 483				–
Recommended tightening torque for the fastening bolts	–	8 N m	12 ... 14 N m	12 ... 14 N m	12 ... 14 N m	–

* Permissible vibration stress according to 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.

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

Order numbers

Version [t]	Accuracy class C3	Accuracy class C5
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 ATEX/IECEX version		
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

* Tick the appropriate box on the type plate to indicate whether the load cell is used in the 1GD or 3GD area. For category 1GD or 2GD, the load cell must be connected intrinsically safe.

Installation accessories

- SENSiQ Secure Mount SSM
- SENSiQ Elastomer Mount SEM



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