

Tensile Force Sensors

Models 85081 and 85082

Code:	85081 EN
Delivery:	approx. 12 weeks
Warranty:	24 months



- Measuring ranges from 0 ... 10 kN to 0 ... 1000 kN
- Non-linearity < 0.2% F.S.
- For static and dynamic measurements
- Made of stainless steel
- Welded construction
- Optionally IP68
- Special versions, e.g. for tensile and compressive force, by request

Application

These load cells have an external or internal thread on both sides and can therefore be used for accurately measuring tensile forces in rods or, using thread eyes, in cables. The robust construction – welded of stainless steel – allows the sensor to be used in many fields such as research, development, test engineering and quality control.

Applications:

- ▶ Vehicle and container scales
- ▶ Test machines
- ▶ Measurements of proportioning and filling level
- ▶ Measurement of cable forces and cranes
- ▶ Avalanche research
- ▶ Oil production

Description

Both load cell types have cylindrical bodies, with a thread at each end for the application of the force. The good figures for linearity, hysteresis and long-term stability are achieved as a result of the special design of the measuring element, on which there is a full-bridge wire strain gauge. The sensors are constructed of stainless steel and are welded to hermetically seal them. The electrical connection has an important effect on the degree of protection of the sensors. Splash-proof protection is achieved here through a high-quality military standard plug-in connector. They are totally sealed by an integrated, waterproof cable connection (optional).

On the model 85081 there is a threaded bolt with an external thread on each side of the cylindrical body. These threaded bolts are integral components of the sensor. On the model 85082, both sides of the cylindrical body have an internal thread.

Technical Data

Model 85081

Order Code	Measuring Range	Tread T	Dimensions [mm]				
			ø D	L	G1 nom.	A	B
85081-10	0 ... 10 kN	M 14 x 2.0	38.1	66.0	24	19.1	39.9
85081-20	0 ... 20 kN	M 14 x 2.0	38.1	66.0	24	19.1	39.9
85081-50	0 ... 50 kN	M 39 x 1.5	63.5	77.5	38	19.1	52.6
85081-100	0 ... 100 kN	M 39 x 1.5	63.5	77.5	38	19.1	52.6
85081-200	0 ... 200 kN	M 39 x 1.5	63.5	77.5	38	19.1	52.6
85081-500	0 ... 500 kN	M 64 x 2.0	88.9	101.6	76	38.1	76.3
85081-1000	0 ... 1000 kN	M 90 x 4.0	114.3	127.0	102	38.1	89.0

Model 85082

Order Code	Measuring Range	Tread T	Dimensions [mm]				
			ø D	L	G1 nom.	A	B
85082-10	0 ... 10 kN	M 14 x 2.0	38.1	108.0	24	9.1	39.9
85082-20	0 ... 20 kN	M 14 x 2.0	38.1	108.0	24	19.1	39.9
85082-50	0 ... 50 kN	M 39 x 1.5	63.5	177.8	38	19.1	52.6
85082-100	0 ... 100 kN	M 39 x 1.5	63.5	177.8	38	9.1	52.6
85082-200	0 ... 200 kN	M 39 x 1.5	63.5	177.8	38	9.1	52.6
85082-500	0 ... 500 kN	M 64 x 2.0	114.3	355.6	76	8.1	89.0
85082-1000	0 ... 1000 kN	M 90 x 4.0	139.7	457.2	102	38.1	101.7

Electrical values

Bridge resistance: foil strain gauges	350 Ω, nominal*
Calibration resistor:	59 kΩ ± 0.1 %
The bridge output voltage caused by a shunt of this value is given in the calibration protocol.	
Reference excitation voltage:	10 V DC or AC
Characteristic:	2 mV/V, nominal*
Isolation resistance:	> 5 MΩ

* Deviation from the stated value are possible.

Environmental conditions

Operation temperature range:	- 55 °C ... 120 °C
Nominal temperature range:	15 °C ... 70 °C
Influence of temperature to:	
zero signal	± 0.01 % F.S./K
characteristic	+ 0.01 % Rdg./K

Mechanical values

Non-linearity:	< ± 0.2 % F.S.
Hysteresis:	< ± 0.2 % F.S.
Spread at unchanged mounting position:	< ± 0.05 % F.S.
Max. operation force:	150 % of nominal force
Nominal deflection at nominal force:	
measurement range ≤ 0 ... 20 kN	approx. 80 μm
measurement range ≥ 0 ... 50 kN	approx. 100 μm

Maximum dynamic load:	
recommended	70 % of nominal load
possible	100 % of nominal load

Design:
The tensile load cells are welded hermetically close. KAPTON is used as an isolation material.

Material: stainless steel 17 - 4 PH (similar to 1.4542)

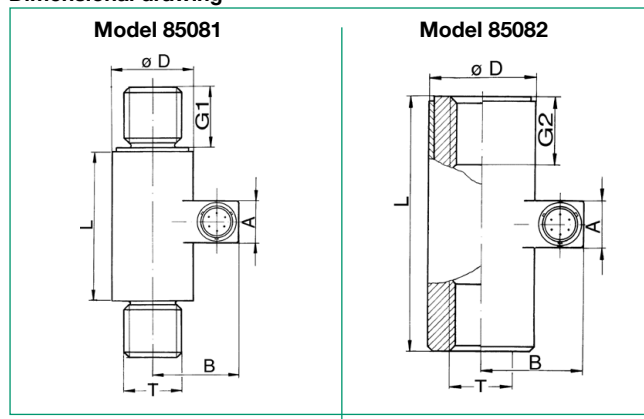
Dimensions: refer to table and dimensional drawing

Protection class: according to EN 60529 IP64 (IP68 refer to options)

Electrical connection:	MIL plug-in connector
measurement range ≤ 0 ... 200 kN	6 pin bajonett connector
measurement range ≥ 0 ... 500 kN	6 pin screw connector

Wiring of the connector (plug):			
pin	A + B	excitation	positive
pin	C + D	excitation	negative
pin	E	output	negative
pin	F	output	positive

Dimensional drawing



Order information

Tensile load cell model 85081, range 0 ... 20 kN **Model 85081-20**

Tensile load cell model 85082, range 0 ... 100 kN **Model 85082-100**

Please use the short term to state options
e.g. option IP68

Order Code ...-Vxxx1xx

Accessories

for measurement range ≤ 0 ... 200 kN

Mating connector (6 pin cable coupling)
in scope of delivery

Model 9945

Connection cable, one end open for soldering,
PVC, length 3 m

Model 9986

Connection cable, suitable to burster desktop devices,
PVC, length 3 m

Model 9911

for measurement range ≥ 0 ... 500 kN

Mating connector (6 pin cable coupling)
in scope of delivery

Model 9946

Connection cable, one side open for soldering,
PVC, length 3 m

Model 99546-000A-0150030

Connection cable, suitable to burster desktop devices,
PVC, length 3 m

Model 9912

Options

Option **Order Code ...-VxFxxx**
Extension of the nominal temperature range to 20 °C ... 120 °C

Option IP68 **Order Code ...-Vxxx1xx**
internal, waterproofed cable connection, length 3 m, approx. ø 6 mm,
usable up to 80 °C, instead of a plug-in connector