

Tension/compression force transducer S-type with adjustable measuring range

with thin film sensor

Accuracy: 0.2 %
Output signals: 4...20 mA; 2-wire system,
0...10 VDC; 3-wire system



Description

The S-type from tecsis has a unique set of features. This multi-range force transducer is able to replace three of the conventional type. With the aid of the EPE01 hand programming unit, it is possible to reduce the measuring range from 100% to 50% and 30%. Built-in overload protection allows up to 2.5-times nominal loading in tension and compression directions.

The proven tecsis thin-film sensors are implanted in this type of force transducer too. The sensor, which is welded in via laser, has all advantages of the conventional bonded foil strain gauges, but without having their substantial disadvantages (temperature drifts of the glue and creeping).

S-type force transducers are often used directly in the flow of force. For example, they are used to determine weight or measure overload. They are used in machinery to determine pressing, closing and assembling forces. Fitted indirectly, they are also used as torque arms for monitoring torque.

Features

- Adjustable measuring range
- Integrated overload protection for tension & compression direction
- Thin film implants (instead of conventional bonded foil strain gauges)
- Corrosion free stainless steel
- Integrated amplifier
- Small temperature drift
- High long term stability
- High shock and vibration resistance
- For dynamic or static measurements
- Good repeatability
- Easy assembly

Measuring ranges

Tension/compression forces from (0.75 kN) 2 kN to 50 kN

Areas of use

- Hoisting gear
- Engagement forces in machinery
- Automated manufacturing
- Construction of plant and machinery

Special note

- All variants include lock nuts

Model: F2351

Technical data

Model	F2351	
	without integrated overload protection	with integrated overload protection
Nominal force F_{nom}	2 / 3 / 5 / 10 / 20 / 30 / 50 kN (Switchable measuring range, see table)	
Accuracy	< 0.2% C_n	< 0.2% C_n
Limiting force	150% F_{nom}	250% F_{nom}
Breaking strength	> 300% F_{nom}	> 600% F_{nom}
Composite error	$\pm 0.2\%$ of FS	
Relative reversal span (hysteresis)	< $\pm 0.1\%$ of FS C_n	
Permissible oscillation width	$\pm 50\%$ F_{nom} accord. to DIN 50100	
Creep, 30 min. at F_{nom}	$\pm 0.1\%$ of FS C_n	
Nominal measuring distance	< 0.5 mm	
Nominal temperature range	-20 ... +80°C	
Working temperature range	-40 ... +80°C	
Storage temperature range	-40 ... +85°C	
Temperature sensitivity - characteristic - zero signal	$\pm 0.2\%$ of FS /10K $\pm 0.2\%$ of FS /10K	
Vibration immunity	20g, 100h, 50...150Hz accord. to DIN EN 60068-2-6	
Degree of protection (accord. to EN 60 529 / IEC 529)	IP 67	
Emitted interference	To EN 61326	
Interference immunity	To EN 61326	
Insulation resistance	> 5 G Ω / 50V	
Types of electrical protection	Reversed polarity, overvoltage and short-circuit protection	
Analogue output	<ul style="list-style-type: none"> - Output signal (span of output signal: C_n) - Current consumption - Auxiliary power - Burden - Response time 	
Material of measuring body	Stainless steel	

Measuring element of stainless steel 1.4542

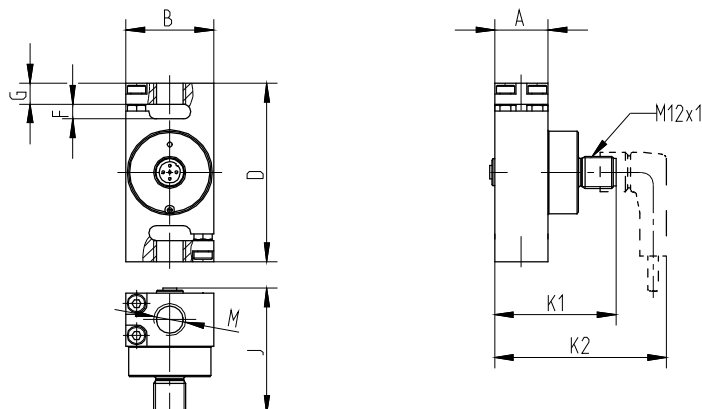
FS = measuring range full-scale value

Measuring range switching

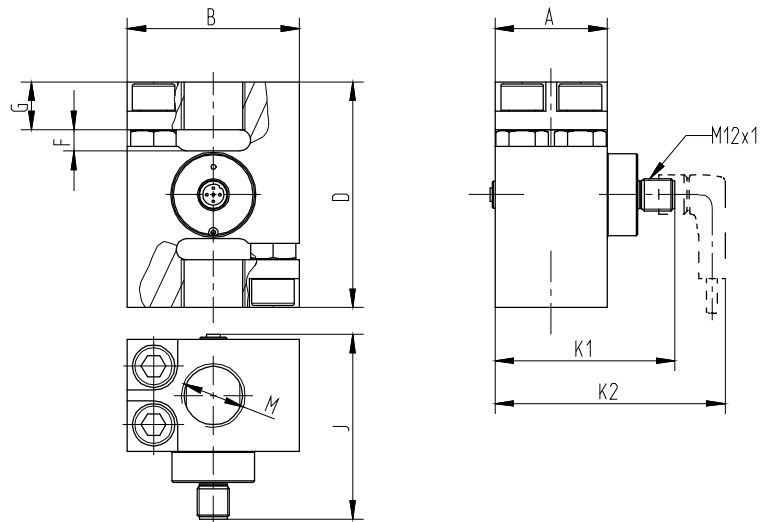
Nom. load	Switchable to	
2 kN	1 kN	0.75 kN
3 kN	2 kN	1 kN
5 kN	3 kN	2 kN
10 kN	5 kN	3 kN
20 kN	10 kN	7.5 kN
30 kN	20 kN	10 kN
50 kN	30 kN	20 kN

Dimensions

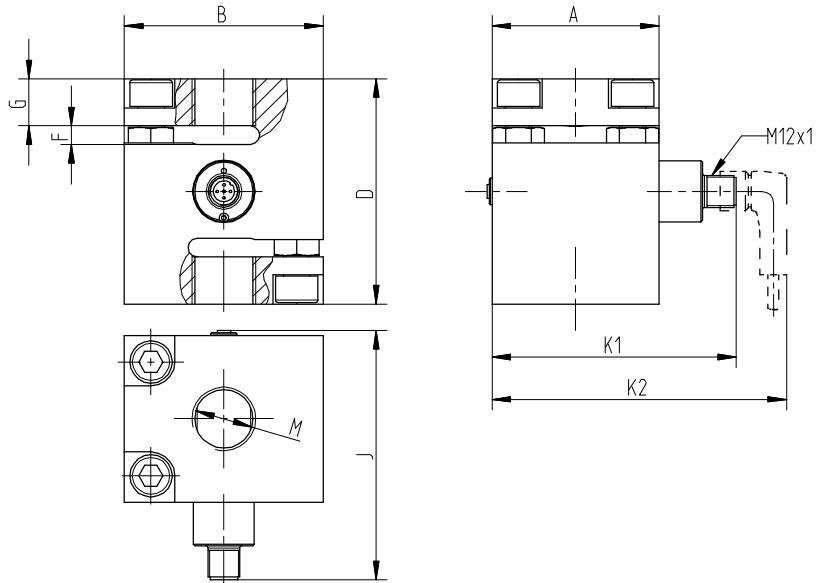
Variant
2 - 5 kN



Variant
10 - 30 kN



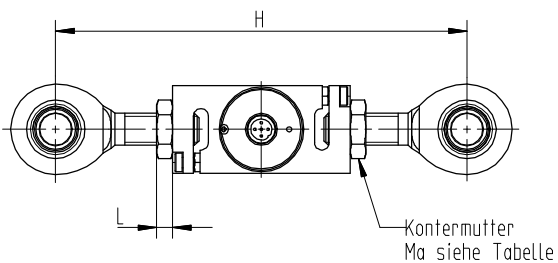
Variant
50 kN



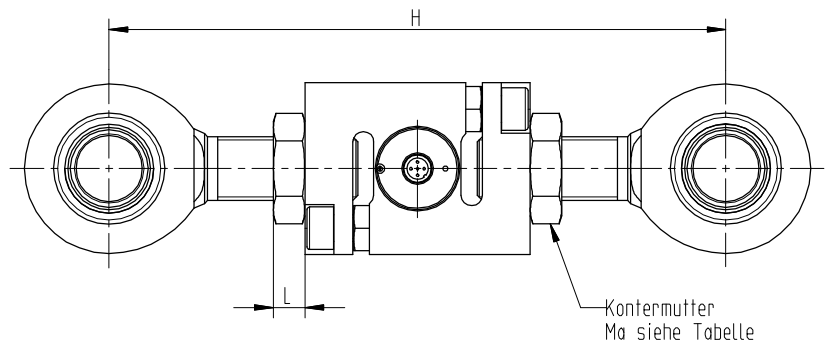
Nom. force in kN	A	B	D	F	G	H	J	K1	K2	L	M	Ma (Nm)
2 / 3 / 5	20	33	67	5.6	7.9	155±2	47.4	45.5	64.5	6	M12	60
10 / 20 / 30	42.2	65	85	8	18	233±2	69.6	67.7	86.7	12	M24x2	500
50	63	75	85	7	17.8	233±2	94.1	92.2	111.2	12	M24x2	500

Fitting dimensions

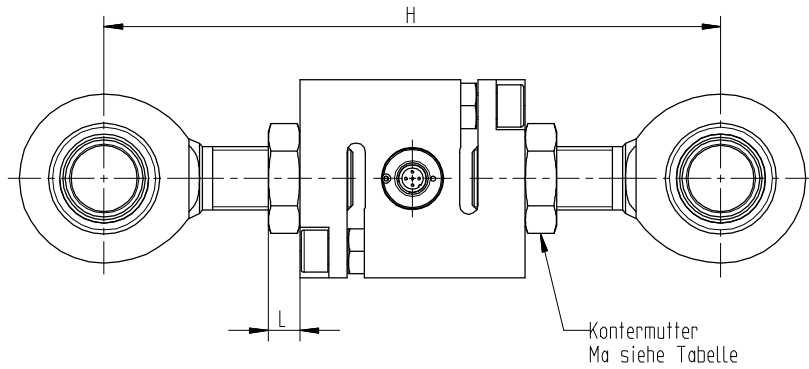
Variant
2 - 5 kN



Variant
10 - 30 kN



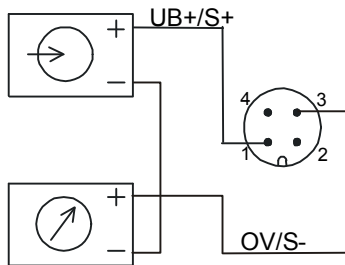
Variant
50 kN



Electrical connection

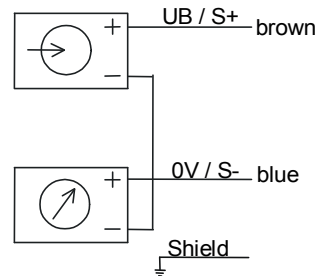
Output 4..20mA (2-wire system)

Round connector M12x1, 4-pole



940E01

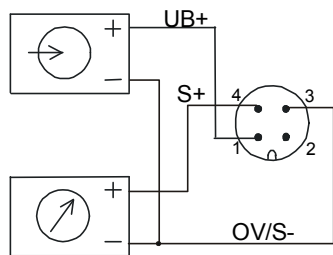
Cable outlet



940E03

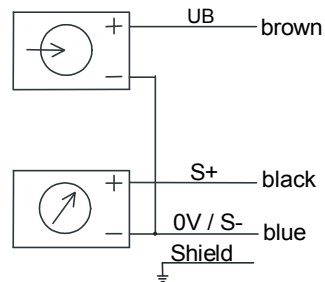
Output 0...10V (3-wire system)

Round connector M12x1, 4-pole



940E04

Cable outlet



940E06

Connector pin assignment M12x1 (4-pole) /

Open cable end of tectis standard connecting cable (STL 288, black)

Pin	4...20 mA (2-wire)	0...10 VDC (3-wire)	Connection identifier
	electr. connection	electr. connection	
1	UB+/S+	UB+	brown
2	-	-	white
3	OV/S-	OV/S-	blue
4	-	S+	black
shielding	thread M12x1	thread M12x1	shield

Subject to change without notice