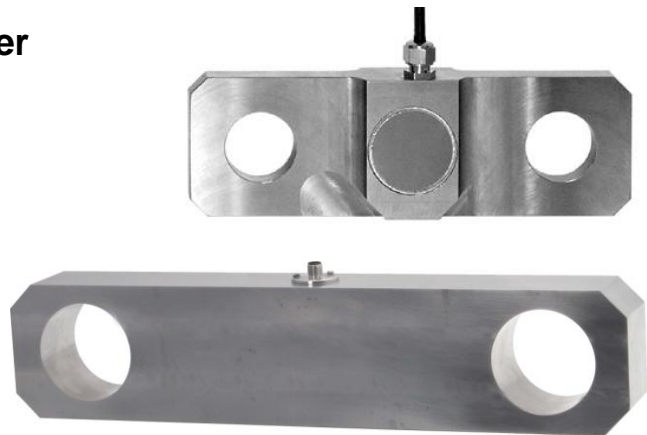


## Tension transducer with amplifier for OEM applications

with thin film sensor

**Accuracy:** 0.5%  
**Output signals:** 4...20mA; 2-wire  
0...10V; 3-wire

**Optional**  II 2G Ex ib IIC T4/T3  
ATEX/IECEX



### Description

Tension transducers are put in as connecting elements between fork bearings or rope constructions, if tensile forces need to be measured in a simple way.

Tension transducers have welded thin film sensors. Produced by very modern manufacturing technology, thin film sensors have all advantages of the conventional bonded foil strain gauges, but without having their substantial disadvantages (temperature drifts of the glue and creeping).

Thanks to the atomic bonding between the strain gauge and the transducer, the tensile transducers are very robust and stable over time. An integrated amplifier supplies an output signal of 4...20mA or 0...10V. The transducer fulfils the requirements of Standard EN 61326 for electromagnetic compatibility (EMC).

Different geometries, nominal loads and electric outputs can be provided on request.

#### ATEX/IECEX (Option)

Only equipment and protective systems with the corresponding certification and markings are to be put into operation in potentially explosive areas. Our force transducers with a thin-film measuring cell and integrated amplifier now have approval according to directive 94/9/EC in equipment group II (non-mining products), category 2G for zones 1 and 2 (gases). Other zones on request.

#### UL-Certification (Option)


tecsis force transducers are also available with UL approval.

FM and CSA Approval submitted.

### Features

- thin-film implants (instead of conventional bonded foil strain gauges)
- corrosion free stainless steel
- amplifier
- small temperature drift
- high long term stability
- big shock and vibration resistance
- for dynamic or static measurements
- good repeatability
- easy assembly

#### ATEX/IECEX (Option)

- for Zone 1 and 2
-  II 2G Ex ib IIC T4/T3

### Measuring ranges

- with integrated amplifier: tension forces from 5 up to 150 t
- with external amplifier: tension forces 3/6/10 t

### Applications



- Load sensing
- Torque support
- Load sensing
- Conveyor systems
- Cran construction

#### ATEX/IECEX (Option)

- Mining
- Chemical and petrochemical industries
- Dedusting and filtration units

Model: F7301, F73C1

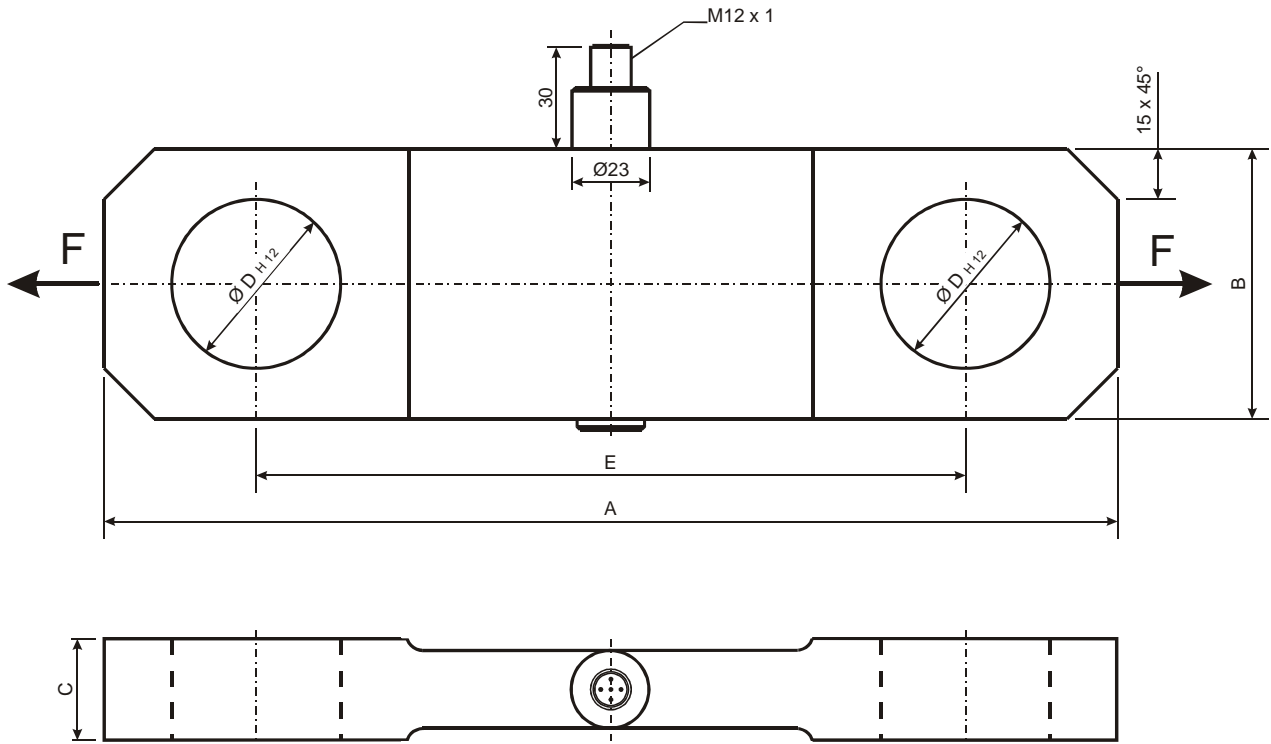
## Technical data

Model	F7301 with integrated amplifier	F73C1 with integrated amplifier ATEX/IECEX (Option)	F73C1 with external amplifier	F73C1 with external amplifier ATEX/IECEX (option)
Nominal load $F_{nom}$	5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 150 t*		3,6,10 t*	
Limit load	150 % $F_{nom}$ *			
Breaking load	> 300 % $F_{nom}$ *			
Combined error	< 0.5% of F.S.*		< 1% of F.S.*	
Hysteresis	$\leq \pm 0.3$ % of F.S.		$\leq \pm 0.5$ % of F.S.	
Creep (30 min. at $F_{nom}$ )	$\leq \pm 0.1$ % of F.S.			
Cross-sensitivity (signal with 100% $F_{nom}$ 90°)	< 2 % $C_n$		< 5 % $C_n$	
Nominal temperature range	-20 ... +80°C*		-40 ... 85°C	
Storage temperature	-40 ... +100°C			
Temperature effect - span - zero	$\leq \pm 0.2$ % $F_{nom}$ / 10K $\leq \pm 0.2$ % $F_{nom}$ / 10K			
Vibration resistance (acc. to DIN EN 60068-2-6)	20g, 100h, 50...150Hz acc. to DIN EN 60068-2-6			
Protection type (acc to. EN 60 529/IEC 529)	IP 67* acc. to EN 60 529 / IEC 529			
Noise emission	acc. to EN 61326			
Noise immunity	acc. to EN 61326			
Insulation resistance	> 5 G $\Omega$ / 50 V			
Electrical protection	Reverse voltage, overvoltage and short circuit protection			
Analog output - Output signal	4 ... 20 mA; 2-wire or 0 ... 10 V; 3-wire*			
- Current consumption	Current output of signal current; Voltage output approx. 8 mA			
- Power requirement	10 ... 30 V DC for current output; 14 ... 30 V DC for voltage output			
- Burden	$\leq (UB-6 V) / 0.024 A$ for current output; 10 k $\Omega$ for voltage output			
- Response time	< 1 ms (within 10% ... 90% $F_{nom}$ )			
- Electrical connection	Circular connector M 12x1, 4-pin*			
Material of measuring device	Stainless steel			
Certification		 II 2G Ex ib IIC T4/T3		 II 2G Ex ib IIC T4/T3

Construction: stainless steel (1.4542) material

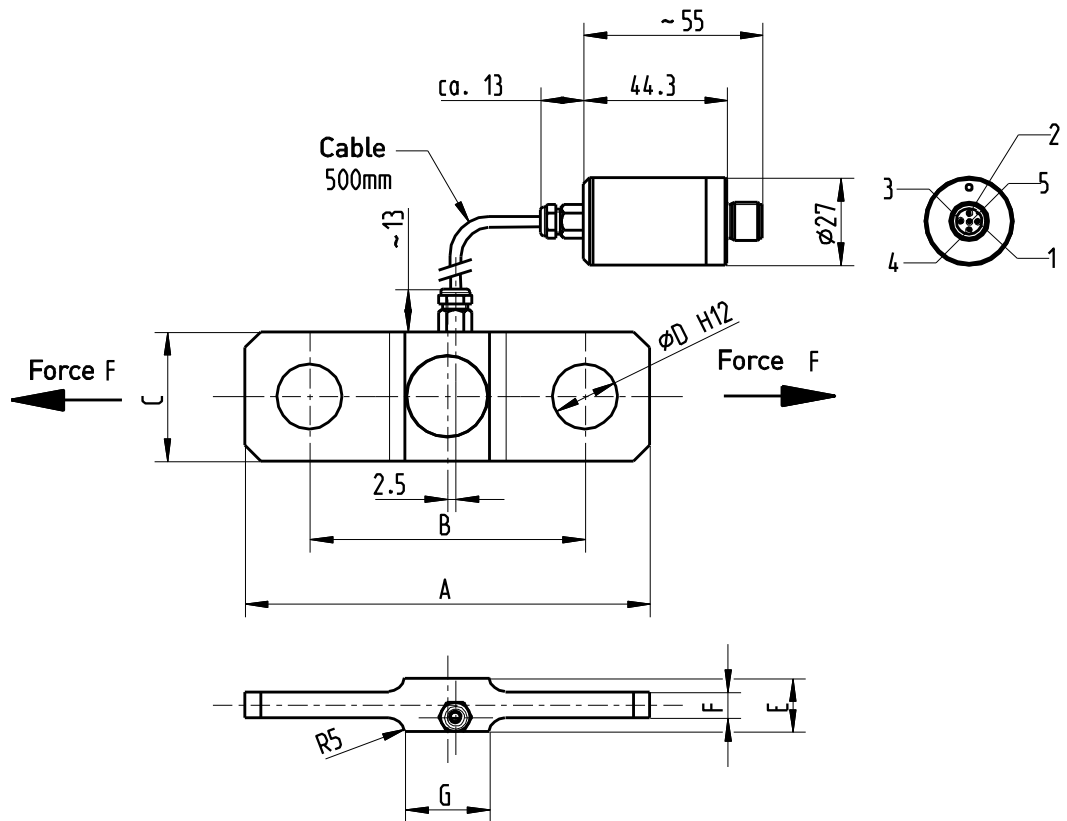
\*other on request

**Dimension**  
with integrated amplifier



Accuracy 0.5%		Analogue output signal					approx. weight [kg]
Nominal load [t]	Nominal load [kN]	A	B	C	D	E	
5	49.1	280	68	30	36	200	4.5
10	98.1	350	90	35	47	250	6.0
15	147.2	410	110	40	44	300	14.8
20	196.2	420	120	50	57	300	17.2
25	245.3	420	120	53	45.5	300	19.8
30	294.3	470	130	60	50.5	340	25.3
40	392.4	480	140	67	60.5	340	30.2
50	490.5	480	140	77	60.5	340	33.8
60	588.6	520	160	87	70.5	360	44.7
80	784.5	570	160	67	80	380	63.8
100	981.0	740	200	110	100.5	500	94.6
120	1177.2	740	210	110	110.5	500	95.2
150	1471.5	740	200	122	91	500	110.7

with external amplifier



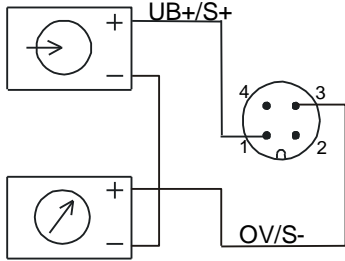
Dimension	A	B	C	D	E	F	G
<b>3t</b>	125	85	40	20.1	16.5	8	26
<b>6t</b>	180	120	60	30.2	18.5	10	31
<b>10t</b>	290	200	80	40.3	20	20	45

# Electrical connection

## F7301/F73C1 ATEX/IECEX (Option)

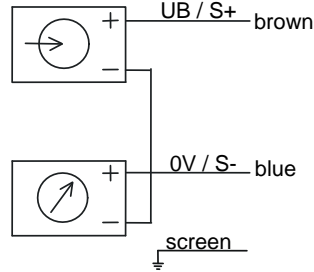
### Output signal 4...20mA (2-wire)

Circular connector M12x1, 4-pin



940E01

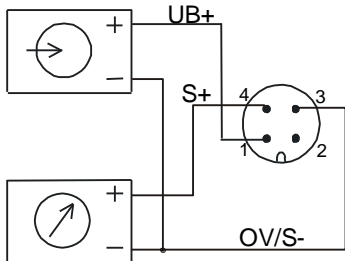
Cable outlet



940E03

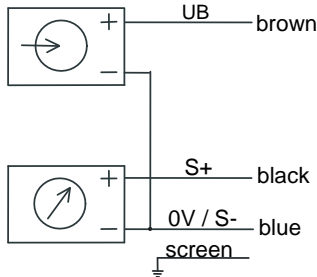
### Output signal 0...10V (3-wire)

Circular connector M12x1, 4-pin



940E04

Cable outlet



940E06

### Pin configuration of connector M12x1 (4-pin) /

Open cable outlet of the tecsis standard connection cable (STL 288, black)

	4...20mA (2 – wire)		0...10V (3 – wire)	
	pin	cable outlet	pin	cable outlet
Supply: UB+	1	brown	1	brown
Supply: 0V	3	blue	3	blue
Signal: S+	1	brown	4	black
Signal: S-	3	blue	3	blue
⚡	thread M12x1	screen	thread M12x1	screen

Subject to technical changes