S-TYPE LOAD CELL

TENSION & COMPRESSION



- CAPACITY 10 KG ... 10 T
- OIML R60 · C2 · C3 · C4
- STAINLESS STEEL · IP68
- FULLY LASER WELDED

CE · RoHS COMPLIANT · IP68 · Stainless Steel · Fully Laser Welded · Dynamic Measurement · OIML · mV/V

NOMINAL LOAD (FS)

Capacity	Classes OIML R60	Approved version	Size Ø (mm)	Weight (kg)
10 · 25 · 50 kg	C2 · C3	–	63.5	0.6
100 · 200 · 300 · 500 kg	C2 · C3	C2 · C3	63.5	0.6
500 kg · 1 · 2 t	C2 · C3	C2 · C3 · C4	82	1.2
2.5 t	C2 · C3	C2 · C3 · C4	82	1.2
5 · 7.5 t	C2 · C3	C2 · C3	102	2.6
10 t	C2 · C3	–	127	≈ 4.4

Approved version with OIML R60 certificate R60-2000-GB1-07.03, for tension applications only; class C4 only there. Minimum verification interval $V_{min} = E_{max} / 10\,000$ (C2, C3), Emax / 15 000 (C4). Acceleration of gravity g = 9.80434 m/s².

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OVERVIEW

S-type load cell of stainless steel for tension and compression, from 10 kg to 10 t, accuracy classes C2 and C3 to OIML R60; the approved version for tension up to class C4.

The elastic element is completely laser welded and protected to IP68 (100 h at 1 m water column); 10, 25 and 50 kg carry a silicone cover and are protected to IP65. It is connected via a 5 m shielded four-wire cable, or optionally via an M12 connector. Typical uses are silos with three tension supporting points or platforms with four jointed feet.

10 kg ... 10 t	C2 · C3 · C4	2 mV/V	IP68
capacities	OIML R60	nominal sensitivity	protection class

MEASUREMENT

- tension and compression, static and dynamic
- combined error down to ≤ ± 0.015 % (C4)
- nominal sensitivity 2 mV/V ± 0.1 %
- natural frequency 0.35 ... 3.25 kHz

DESIGN

- stainless steel, completely laser welded
- IP68 (10 ... 50 kg: IP65)
- female thread M12 × 1.75 ... M30 × 2
- 5 m cable, M12 connector option

TECHNICAL DATA

PRECISION (C2 · C3 · C4)

Legal divisions	2000 · 3000 · 4000
Combined error	≤ ± 0.023 · 0.018 · 0.015 %
Non-repeatability	≤ ± 0.015 · 0.010 · 0.010 %
Zero return over 30 min	≤ ± 0.025 · 0.015 · 0.010 %
Creep over 30 min	≤ ± 0.025 · 0.015 · 0.015 %
Creep over 20 and 30 min	≤ ± 0.005 · 0.005 · 0.003 %
Temperature effect on zero (10 °C)	≤ ± 0.028 · 0.010 · 0.008 %
Temperature effect on sensitivity (10 °C)	≤ ± 0.012 · 0.010 · 0.008 %

MECHANICAL PROPERTIES

Material	stainless steel, completely laser welded
Displacement at nominal load	≈ 0.2 mm
Weight	0.6 kg (Ø 63.5) · 1.2 kg (Ø 82) · 2.6 kg (Ø 102) · ≈ 4.4 kg (Ø 127)
Protection class (EN 60529)	IP68 (100 h at 1 m water column) · 10, 25, 50 kg: IP65 (silicone cover)

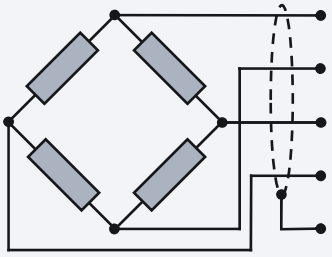
ELECTRICAL PROPERTIES

Nominal sensitivity	2 mV/V
Sensitivity tolerance	≤ ± 0.1 %
Input resistance	420 ± 20 Ω
Output resistance	350 ± 2 Ω
Insulation resistance	> 5 GΩ
Zero balance	≤ ± 1 %
Recommended supply voltage	10 V
Nominal supply voltage	1 … 15 V
Maximum supply voltage	18 V
Cable	PVC 105 °C, shielded, Ø 5.2 mm, 4 × 0.35 mm², 5 m (10 m on request)

TEMPERATURE

Reference temperature	+23 °C
Nominal temperature range	–10 … +40 °C
Service temperature	–20 … +70 °C
Storage temperature	–20 … +80 °C

ELECTRICAL CONNECTION



+ EXCITATION	RED
– EXCITATION	BLACK
+ SIGNAL	WHITE
– SIGNAL	YELLOW
SHIELD	

MECHANICAL LIMITS (REFERRED TO NOMINAL LOAD)

Minimum load	0 %FS	Lowest load from which measurement is possible.
Service load	120 %FS	Load without any permanent deformation or change in calibration.
Max. permissible load	150 %FS	The highest static load that may be applied once or briefly without mechanical damage.
Breaking load	> 300 %FS	Load at which permanent deformation or mechanical failure (fracture) occurs.
Max. transverse load	100 %FS	Maximum lateral or shear load that can be applied (e.g. due to misalignment or friction).
Max. permissible dynamic load	50 %FS	For cyclic or oscillating loads, the amplitude should not exceed this load to prevent fatigue failure.

NATURAL FREQUENCY

10 · 25 · 50 kg	0.35 · 0.65 · 1.05 kHz
100 · 200 · 300 · 500 kg (Ø 63.5)	1.25 · 1.75 · 1.75 · 1.80 kHz
500 kg (Ø 82) · 1 · 2 · 2.5 t	2.20 · 2.50 · 2.50 · 3.25 kHz
5 · 7.5 · 10 t	3.20 · 3.00 · 3.25 kHz

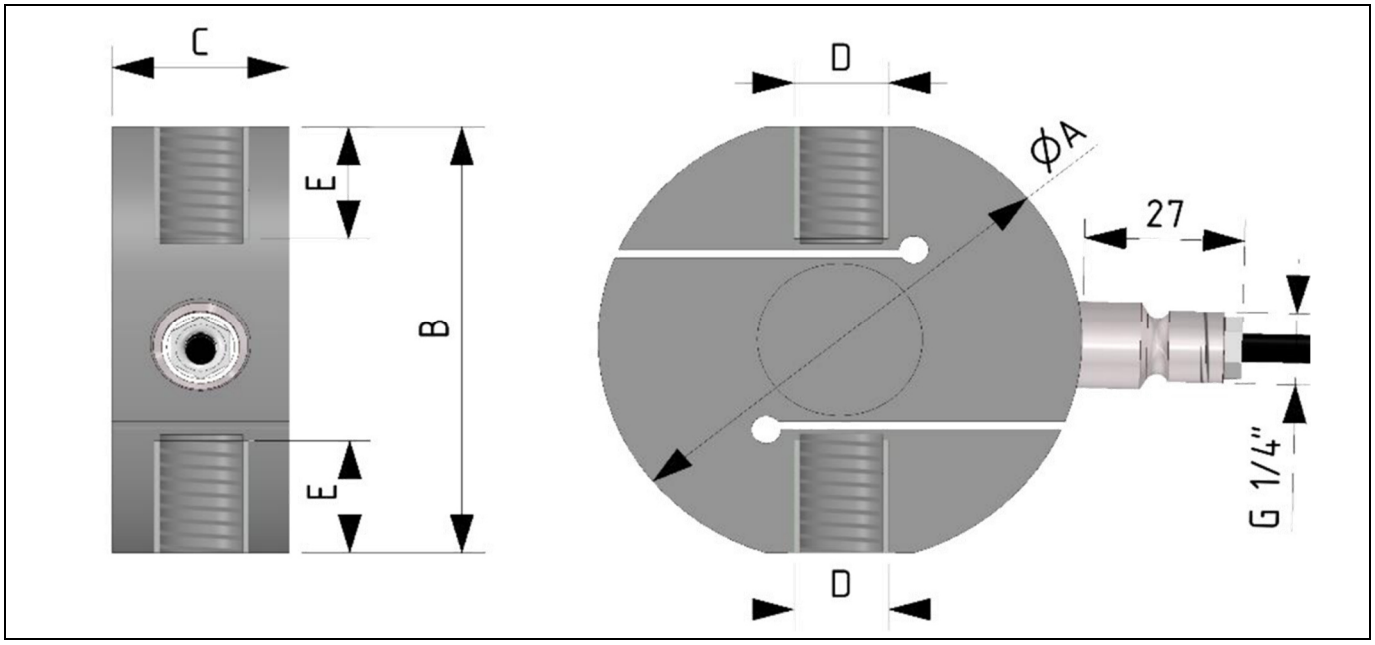
M12 CONNECTOR, 5-POLE (OPTION)

Excitation +	Pin 1
Excitation –	Pin 3
Output +	Pin 2
Output –	Pin 4
Shield	Pin 5

ACCESSORIES AND OPTIONS

M12 connector	direct output on the load cell; not available for the approved version
Connection cable	female M12 × 1, 5-pole, straight, PVC, shielded, 3 m
Knuckle joints	to ISO 12240-4 series E, M12 ... M30 × 2
Calibration report	compression or tension

DIMENSIONS (mm)



Dimensions in mm; the letters refer to the dimension table. Cable gland G 1/4.

DIMENSION TABLE (mm)

Capacity	Ø A	B	C	D	E
10 ... 500 kg	63.5	59.5	22	M12 × 1.75	12
500 kg ... 2 t	82	78	30	M16 × 2	20
2.5 t	82	78	30	M20 × 1.5	20
5 t · 7.5 t	102	90	45	M24 × 2	21.5
10 t	127	120	50	M30 × 2	29

500 kg is available in size Ø 63.5 and Ø 82 mm. The approved version has the same dimensions.

COMPLIANCE AND CERTIFICATION

Protection Rating	IP68 (100 h at 1 m water column) · 10, 25, 50 kg: IP65
Compliance	CE, RoHS · OIML R60
Calibration	Calibration report on request (compression or tension)
Certifications	OIML Approved version: OIML R60, certificate R60-2000-GB1-07.03 (tension only)