SMART Mechanical

SIX AXES LOAD CELL

High load and frequency

ACCURATE

CUSTOMIZATION

LOW COST

SMART Mechanical

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High load and frequency

SM_LC new six components load cell is able to measure the three components of a force and the three components of a moment acting on the load cell itself. The patented sensing structural element, a three spokes structure constrained to the frame of the load cell by means of special joints conceived to avoid friction, provides the load cell with high load and stiffness whilst guaranteeing very low crosstalk and high accuracy.
The transducer, fitted with six Wheatstone bridges conveniently located on highly stressed areas, is available without electronics, i.e. the outputs are the six Wheatstone bridges, or with the electronics accommodated inside the cell, providing the operator with direct measurements of forces and moments.

Excellent reliability High loads and stiffness Very low crosstalk High accuracy & precision Patent design Low cost Possibility of customization.

AUTOMOTIVE

NVH testing
Suspension testing
Transmission testing
Tire & Wheel testing

ROBOTICS

Manipulator joint forces
Weight measurement
Monitoring of manoeuvring forces
Walking controls

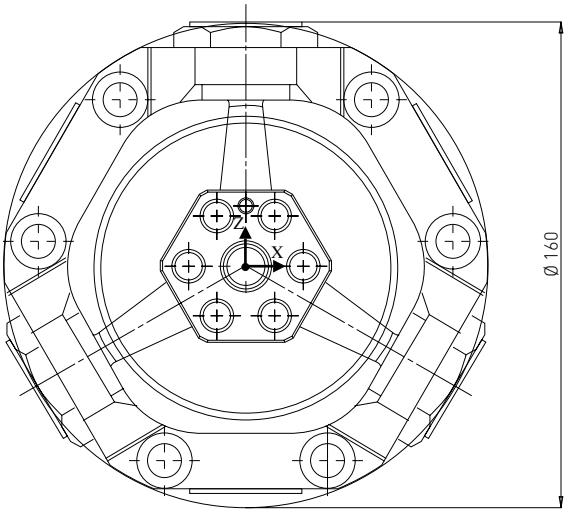
AVIATION

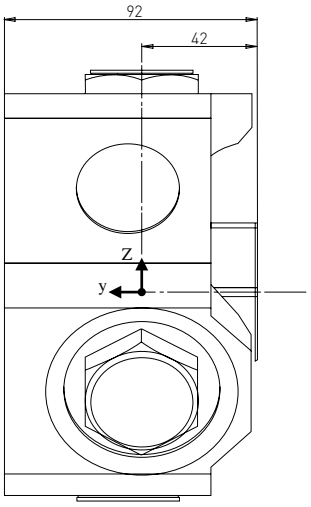
Wind tunnel balances

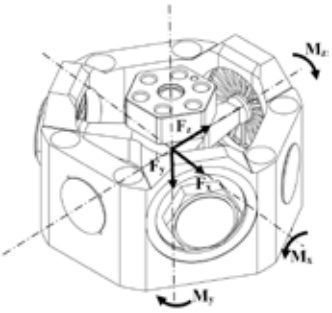
MEDICAL

Human body behaviour
Crash test dummies

Mechanical Drawings





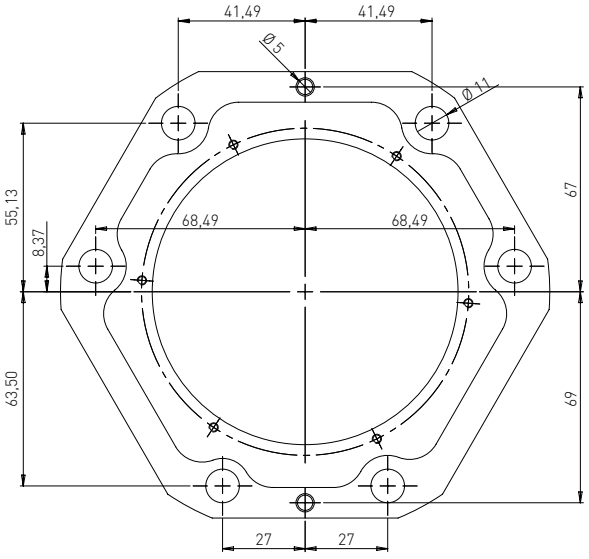


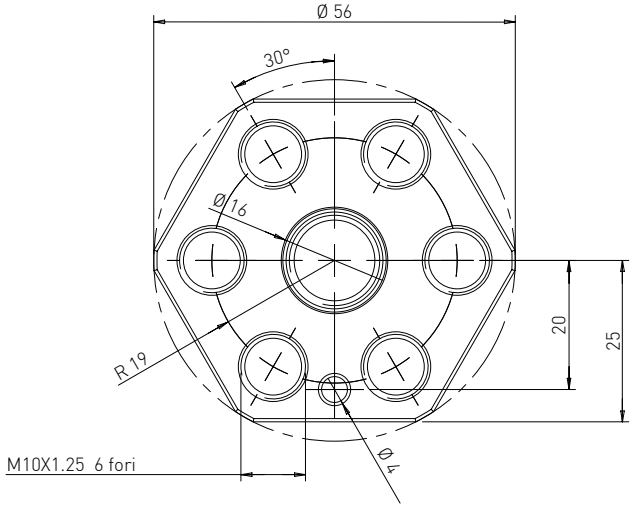
Mechanical Interface

Lower interface

- 6 holes for 6 M10 10.9 screws.
- 6 threaded holes M14 x 1.5 (this is a secondary option for fastening the load cell lower interface).
- Two reference holes for steel pins define the z axis orientation on the lower interface plane.

Recommended tightening torque: 50 Nm.





Upper interface

- 6 threaded holes for 6 M10x1.25 12.9 screws.
- The center hole and a steel pin hole define the z axis orientation on the upper interface plane.

Recommended tightening torque: 85 Nm.

SPECIFICATION	Typical		Units
Sensing Range (FS)	SM_LC-10	SM_LC-05	
Fx	5000	2500	N
Fy	10000	5000	N
Fz	5000	2500	N
Mx	500	250	Nm
My	250	125	Nm
Mz	500	250	Nm
Stiffness			
Kx	$28x10^6$		N/m
Ky	$80x10^6$		N/m
Kz	$28x10^6$		N/m
Natural Frequency			
1st	1.070		Hz
2nd	1.550		Hz
Accuracy & Precision	< 0,3		% FS (±2σ samples)
Resolution			
F	< 0,5		N
M	< 0,05		Nm
Nonlinearity	< 0,2		% FS
Crosstalk	< 0,5		% FS
Safe Overload	120	200	% FS
Hysteresis	< 0.1		% FS
Strain Gauge Resistance	350 ± 3%		Ohm
Compensated Temp Range	0 to 50		°C
Working Temperature Range	-10 to 80		°C
Output			
Without Electronic	Full bridge		mV/V
With Electronic	0 to 10		V
Supply Voltage	DC, any value 9V ~ 19V		
Electrical interface	Connector on load cell case		
Mass	2.7		kg
Environmental	IP30 for indoor usage Higher IP levels available upon request		
Dimension	Please refer to attached drawing		

ELECTRICAL INTERFACE	
Connector	Mating Connector
Amphenol - MS3102A-18-1P	Amphenol - MS3106A-18-1S

Pin	Function	Pin	Function
A	Fx	F	Mz
B	Fy	G	Power
C	Fz	H	Optional (serial RX)
D	Mx	I	Optional (serial TX)
E	My	J	GND

Ordering Information

SM_LC - 10 - 6 - EL

Sensing range
- 10 Fy= 10 kN
- 05 Fy= 5 kN

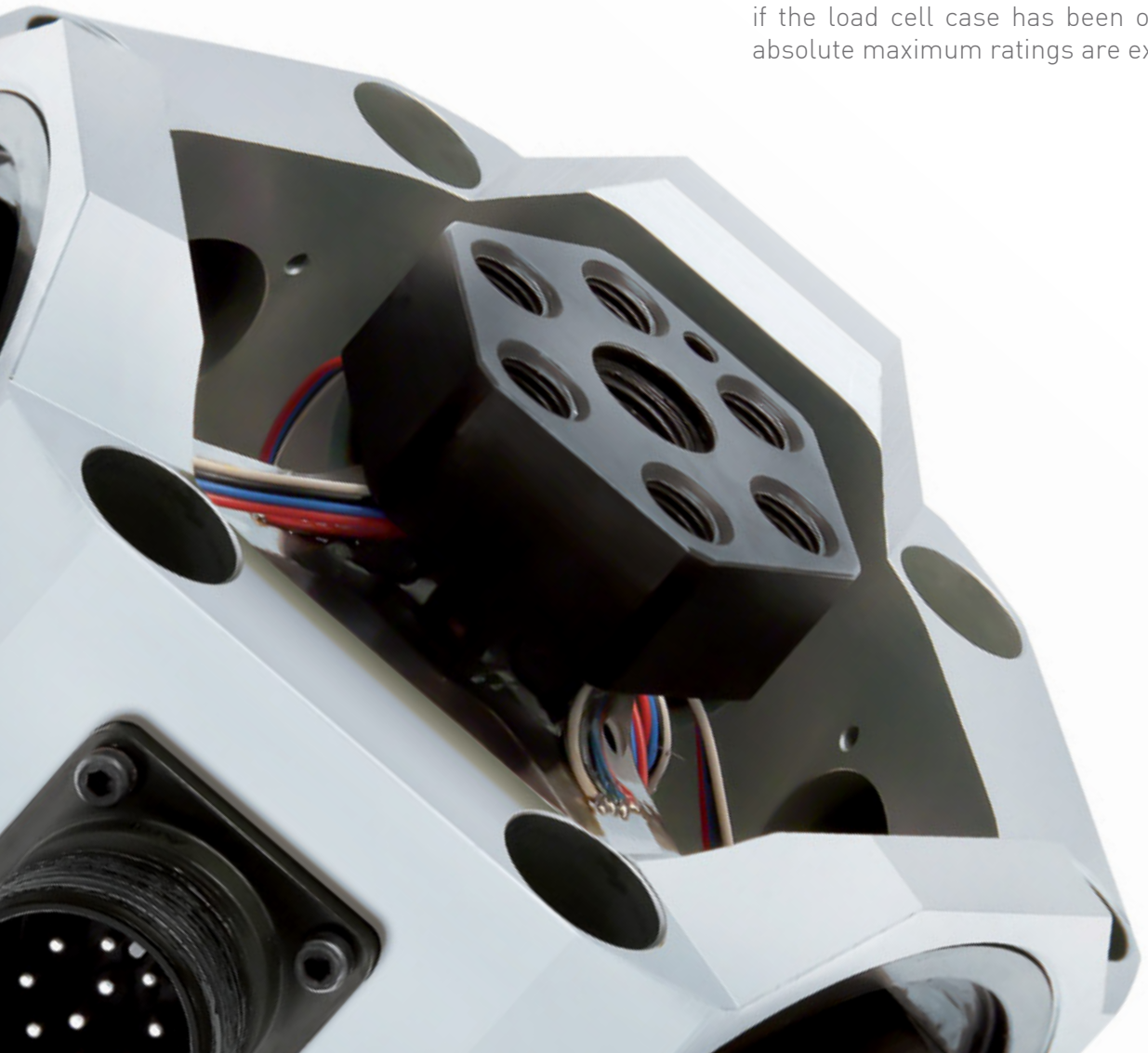
Components Output
- 6 6 Components

Output
- EL On-board Electronics
- No letter Wheatstone bridge

Custom designed products are available upon request.

Warranty

A standard 12-month warranty following shipment applies. Any warranty is null and void if the load cell case has been opened or if the absolute maximum ratings are exceeded.



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