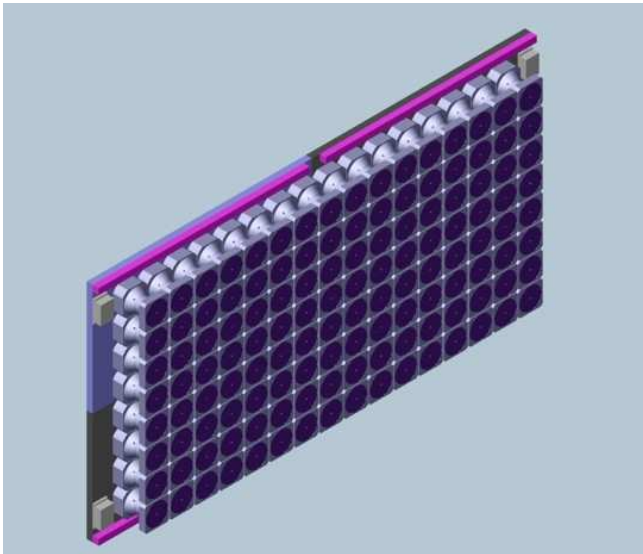


Concept[®] - Load Cell Wall “Magnetostrictive System“



Function description

The unique, high dynamic “magnetostrictive load cell wall” developed by Concept Technologie is designed for measuring two-dimensional load distribution during crash tests, both uniaxial and triaxial according to SAE J211. Basically, it enables qualitative visualization of load distribution on the front end of different vehicles. Concept offers standard measurement plates of 125 x 125 and 250 x 250 mm. The data gathered during crash tests is recorded by means of state-of-the-art digital measuring technique and stored as a three-dimensional structured array.

This unique load cell wall developed by Concept Technologie not only ensures high investment protection but also offers the simple option of mobile load distribution measurement.

FROM USER TO USER

As user and as system manufacturer we gladly make our expertise available to our customers.

Benefits at a glance:

- ✓ High quality advantage through unique magnetostrictive solution
- ✓ Also usable as mobile barrier due to its extra-light construction
- ✓ Extension of measuring range due to high bandwidth (natural frequency > 4 kHz)
- ✓ High repeatability and accuracy (nonlinearity < 0.1%)
- ✓ Minimal maintenance costs (no moving parts, nitrided steel, hermetically sealed)
- ✓ Avoidance of costly real tests through simple simulation based on triaxial measuring option
- ✓ Cost saving due to option of calibrating each single load cell.
- ✓ Cost saving through easy assembly of load cells.

CONCEPT Load Cell Wall



www.concept-tech.com

Technical data:

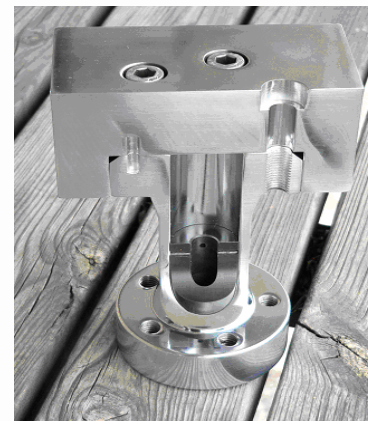
<ul style="list-style-type: none"> ➤ Segment size: [mm] ➤ Assembly mass: [kg] ➤ Assembly mass incl. milled head plate:[kg] ➤ Mass of head plate for static load cell wall:[kg] ➤ Capacity X-axis: [kN] ➤ Capacity Y-axis, Z: [kN] ➤ Nonlinearity: [% f.s] ➤ Eccentricity: [% f.s] ➤ Hysteresis [% f.s] ➤ Temperature:[°C] ➤ Head plate material: ➤ System protection ➤ Output voltage at rated load [V] ➤ Repeatability Error [% f.s] ➤ Crosstalk [% f.s] ➤ Supply voltage V dc ➤ Sampling rate [kHz] ➤ Resonant frequency F_N [kHz] 	<p>125 x 125 x 120 (up to 208 pieces) Approx. 2 (without head plate) < 3 Approx. 7.5 200 (max. 420), 100 < 0.1, < 0.5 < 0.75 -20 +70 (calibration temp.: 22 ± 1) Nitrided steel IP 66 0...5 linearized < 0.02 < 1 9-12 20 p. channel (16 bit) > 4</p>	<p>250 x 250 x 120 500 (max. 700) 200 < 0.2 < 1 < 0.75 -20 +70 Nitrided steel IP 66 0...5 linearized < 0.02 <1 9-12 20 p. channel (16 bit) > 2</p>
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The above-mentioned data applies to standard conditions as well as short durations of measurement.

Scope of supply

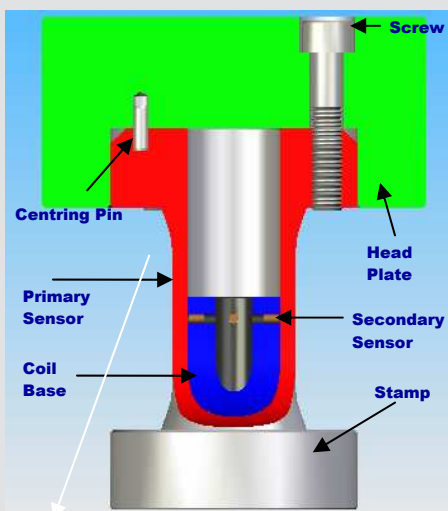
Sample-synchronous AD converter with aliasing filter directly mounted on AD card.

- Segment basic plates
- Segment head plates
- Magnetostrictive load cells
- Base frame of robust steel construction
- Industrial PC with AD hardware
- Data recording/analysis: (DIAdem, AVL-Concerto..)
- Interface: Ethernet 100 Mbit
- Uninterruptible power system UPS



cutaway view of a load cell

Magnetostrictive measuring method



The **primary sensor** is magnetically encoded. Encoding takes place before the cell is assembled and is permanent. The sensor is also called Sensor Host (**SH**) and consists of ferromagnetic material, e.g. 14CrNi14, 50NiCr13 or similar. This sensor analyses the changes in the applied primary force based on the changes in the magnetic field.

The **secondary sensor** consists of a number of Magnetic Field Sensors (**MFS**) that are positioned as close as possible to the SH without touching it. This sensor converts the changes in the magnetic field into electrical signals.