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Thoracic Spine Load Cell

Type M564A5A...

Five-axial

Type M564A5A... is designed to measure forces and moments in the thoracic spine of the crash test dummies HIII-50 % (H3), HIII-95 % (HM) and Polar.

- Five-axial (F_x, F_y, F_z, M_x, M_y)
- UPS module available
- Low linearity error and hysteresis error
- Kistler system cabling
- Polarities according to SAE J211/1

Description

The load cell is made of elements on which forces and moments are transmitted. The mechanical deformation element, applied with strain gage, serves for mechanical electrical deformation. The forces and moments to be measured create mechanical stretches and buckling in the gaging member. In order to avoid linearity errors, the deformation paths are constructively held small (high rigidity). Thus a proportional behavior is realized.

The force and moment proportional resistance variations are measured by a Wheatstone-type bridge circuit. The load cell is available with UPS module which is integrated in an external housing in the wiring or in the connector. Customized cable lengths and connectors with specific pin assignments are optionally available.

Technical data

Axes		F_x	F_y	F_z	M_x	M_y
Measuring range	kN	13.35	13.35	17.8		
	N·m				680	900
Bridge output voltage (typ.)	mV/V	2.0	2.0	1.1	1.4	1.6
Sensitivity (typ.)	µV/V/kN	150	150	60		
	µV/V/N·m				2.0	1.7
Bridge resistance	Ω	350	350	700	700	700
Ultimate load, static	%	150	150	150	150	150

General data		
Supply voltage[1)]	VDC	5 ... 15
Insulation resistance[2)]	GΩ	>10
Operating temperature range	°C	–20 ... 80
Storage temperature range	°C	–30 ... 90
Amplitude non-linearity (typ.)	%	<1
Hysteresis (typ.)	%	<1
Channel cross talk	%	<5
Bridge zero output (typ. / max)	mV/V	0.01 / 0.03
Weight, without cable	grams	1 078

All specifications are typical at 25 °C and 10 V sensor supply voltage, unless otherwise specified.

1) With UPS module 9 ... 12 VDC
2) All wires to load cell housing, measured with 500 VDC

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Application

The load cell is directly assembled at the designated location in the dummy and provides important information about the loads on the human body occurring during a crash test.

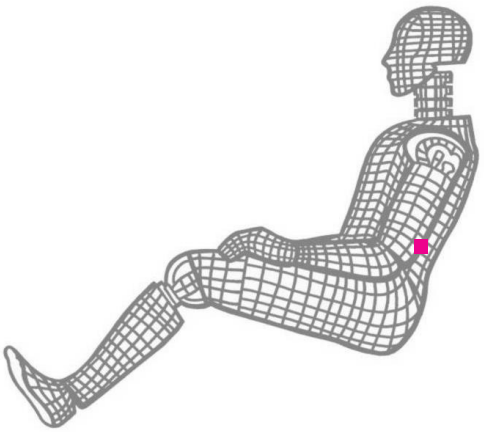

Fig. 1: Dummy application thoracic spine

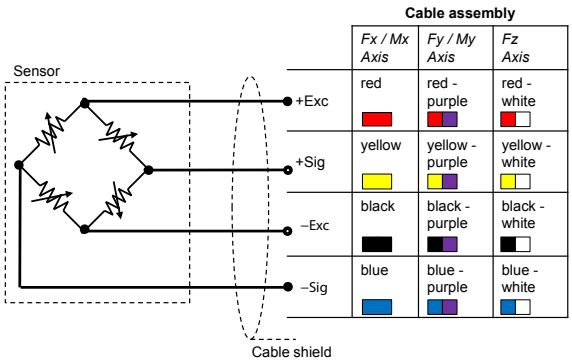

Fig. 2: Dummy application thoracic spine

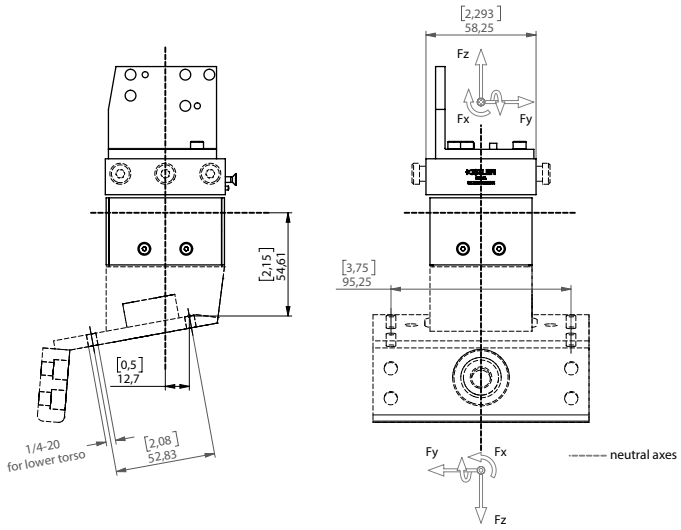

Fig. 3: Dimensions

Included accessories

- None

Optional accessories	Type no.
• Add. label with serial number, plug side	M015KABID
• UPS module	on request
• Add. label with ID number at sensor	M015KABID
• Add. shunt	on request

Ordering key

Type M564A5A ☐☐☐☐☐

Design

Standard	**VM**

Cable length before electronics

0 cm	**00**
<10 cm (digit x 1 cm)	**C#**
10 cm ... 9.9 m (digit x 10 cm)	**##**
10 m ... 90 m (digit x 10 m)	**D#**

Additional electronics

Sensor detail, as per type declaration force-moment TP-650-2	**#**

Cable length after electronics

0 cm	**00**
<10 cm (digit x 1 cm)	**C#**
10 cm ... 9.9 m (digit x 10 cm)	**##**
10 m ... 90 m (digit x 10 m)	**D#**

Connector

Conn. type, as per TP-600	**#-**
Conn. assignment, as per TP-600	**-#**