

# Lumbar Spine Load Cell

Type M56826A...

## Six-axial

Type M56826A... measures forces and moments in the lumbar spine of the crash test dummies WorldSID-50 % (WS) and WorldSID-5 % (W5).

- Six-axial ( $F_x$ ,  $F_y$ ,  $F_z$ ,  $M_x$ ,  $M_y$ ,  $M_z$ )
- UPS module integrable
- Low linearity errors and hysteresis
- Kistler system cabling
- Polarities according to SAE J211/1



### Description

The load cell is made of elements on which forces 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

Axial Data		$F_x$	$F_y$	$F_z$	$M_x$	$M_y$	$M_z$
Measuring range	kN	10	10	12			
	N·m				300	300	200
Bridge output voltage (typ.)	mV/V	1,6	1,6	1,0	1,8	1,8	1,8
Sensitivity (typ.)	$\mu\text{V}/\text{V}/\text{kN}$	160	160	80			
	$\mu\text{V}/\text{V}/\text{N}\cdot\text{m}$				6	6	9
Bridge resistance	$\Omega$	700 <sup>1)</sup>	700 <sup>1)</sup>	700	350	350	350 <sup>1)</sup>
Ultimate load, static	%	150	150	150	150	150	150

### General Data

Supply voltage <sup>2)</sup>	VDC	2,5 ... 15
Insulation resistance <sup>3)</sup>	G $\Omega$	>10
Operating temperature range	$^{\circ}\text{C}$	-20 ... 80
Storage temperature range	$^{\circ}\text{C}$	-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	475

All specifications are typical at 25  $^{\circ}\text{C}$  and rated at 10 V sensor supply, unless otherwise specified.

<sup>1)</sup> Up to serial number 0004399051 (up to year of construction 2015) the bridge resistance of the load cells is 350  $\Omega$  ( $F_x$ ,  $F_y$ ) resp. 700  $\Omega$  ( $M_z$ ). Please mind the first calibration!

<sup>2)</sup> With UPS module 9 ... 12 VDC

<sup>3)</sup> All wires to load cell housing, measured with 500 VDC

**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.

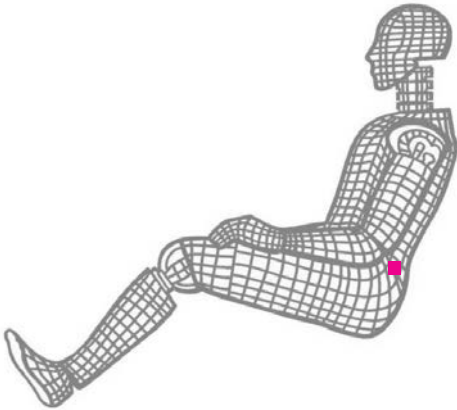


Fig. 1: Dummy application, location lumbar spine

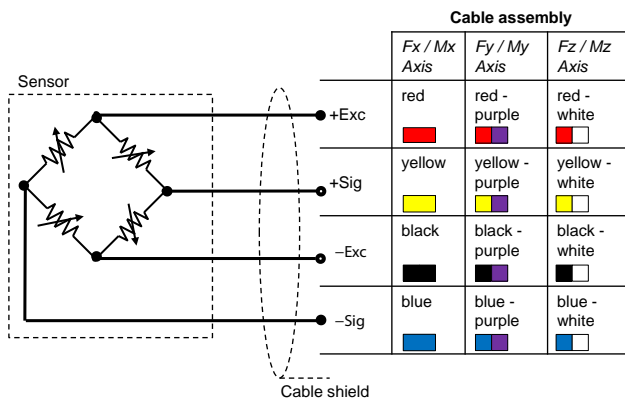


Fig. 2: Cable assembly

**Included Accessories**

- None

**Optional Accessories**

- Add. label with serial number, plug side
- UPS module
- Add. label with ID number at sensor
- Add. shunt

**Art. No.**

M015KABID  
on request  
M015KABID  
on request

**Ordering Key**

Type M56826A		
<b>Design</b>	Standard	IM
<b>Cable Length before Electronics</b>	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#
<b>Additional Electronics</b>	Sensor detail, as per type declaration force-moment TP-650-2	#
<b>Cable Length after Electronics</b>	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#
<b>Connector</b>	Conn. type, as per TP-600	#-
	Conn. assignment, as per. TP-600	-#

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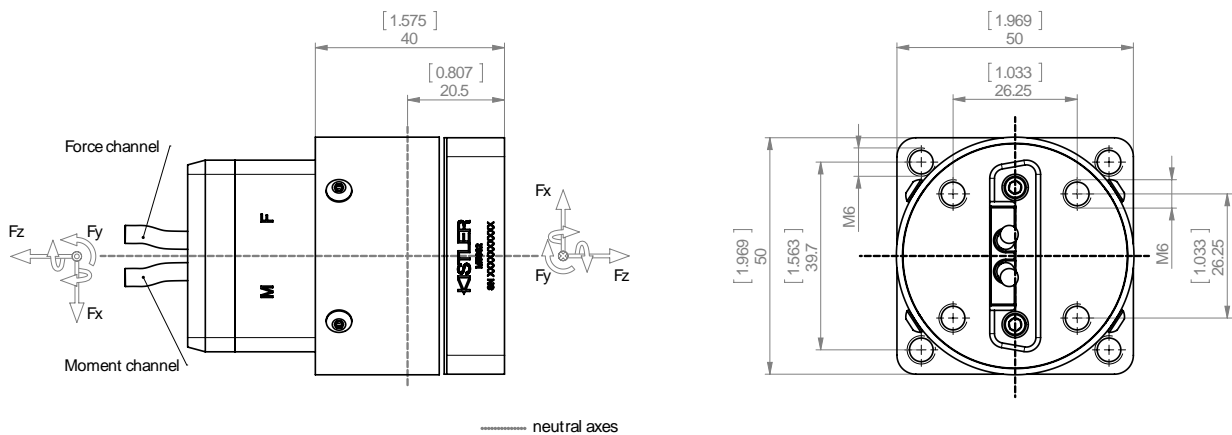


Fig. 3: Dimensions in mm

This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

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