

Lumbar Spine Load Cell

Type M56216A...

Six-axial

Type M56216A... is used in the crash test dummy HIII-95 % (HM) and HIII-50 % (H3) to measure forces and moments in the lumbar spine.

- Six-axial (F_x , F_y , F_z , M_x , M_y , M_z)
- UPS module available
- 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	15	15	20			
	N·m				600	600	350
Bridge output voltage (typ.)	mV/V	1,9	1,9	1,1	1,8	1,8	1,6
Sensitivity (typ.)	$\mu\text{V/V/kN}$	127	127	55			
	$\mu\text{V/V/N}\cdot\text{m}$				3,0	3,0	4,6
Bridge resistance	Ω	350	350	700	700	700	350
Ultimate load, static	%	150	150	150	150	150	150

General Data

Supply voltage ¹⁾	VDC	2,5 ... 15
Insulation resistance ²⁾	G Ω	>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	7 200

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

¹⁾ With UPS module 9 ... 12 VDC

²⁾ 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.

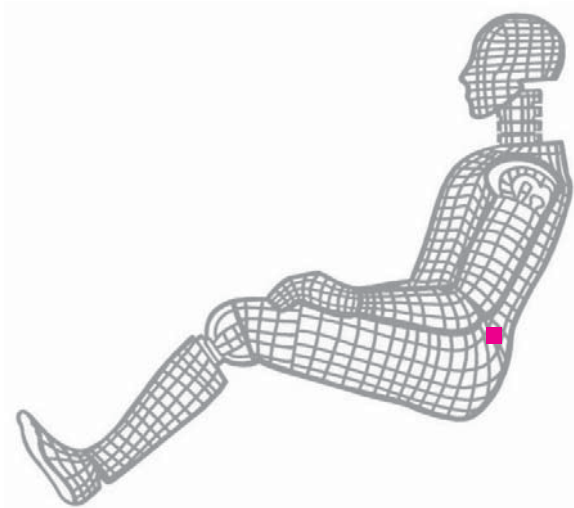


Fig. 1: Dummy application, location lumbar spine

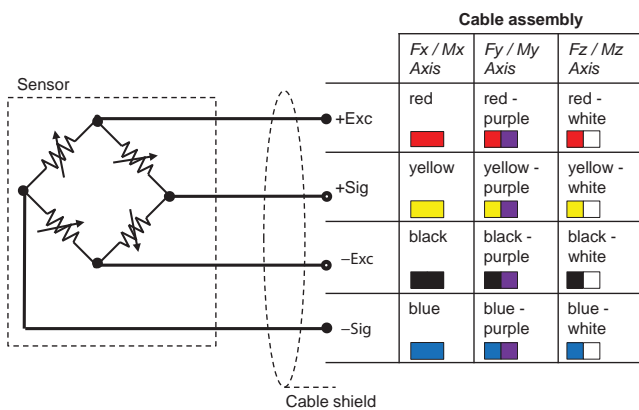


Fig. 2: Cable assembly

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 M56216A		
Design	Standard	IM
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	-#

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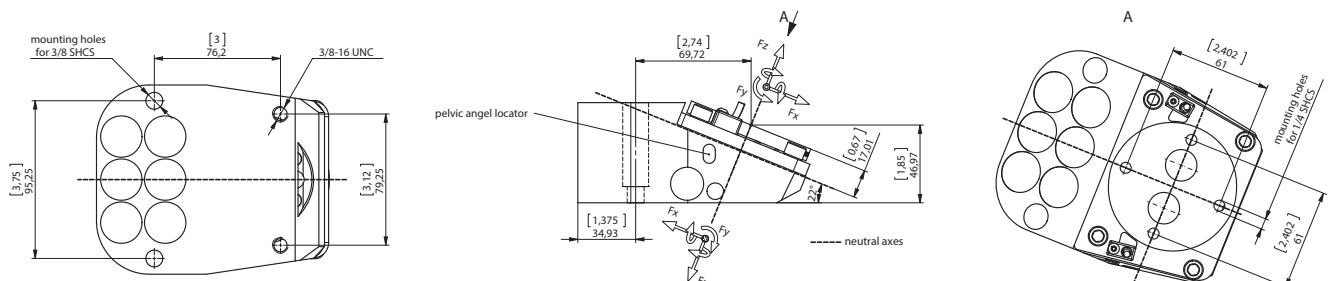


Fig. 3: Dimensions in mm

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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