

Femur Load Cell

Type M506A6A...

Six-axial

Type M506A6A... is designed to measure forces and moments in the femur of the crash test dummies HIII-5 % (HF), HIII-50 % (H3), HIII-95 % (HM), and SID-IIs (S2).

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



Description

The load cell is made of a deformation body that is affected by forces and moments. Those mechanical forces and moments create stretches and bucklings that cause a resistance change on the applied gaging members. This resistance change is measured as electrical signal in a bridge circuit.

In order to avoid linearity errors, the deformation paths are constructively held small (high rigidity). Thus a proportional behavior is realized. 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	13,3	13,3	22,2			
	N·m				340	340	340
Bridge output voltage (typ.)	mV/V	1,7	1,7	1,4	1,5	1,5	2,3
Sensitivity (typ.)	$\mu\text{V/V/kN}$	128	128	63			
	$\mu\text{V/V/N·m}$				4,4	4,4	6,8
Bridge resistance	Ω	700 ¹⁾	700 ¹⁾	700	350	350	350 ¹⁾
Ultimate load, static	%	150	150	150	150	150	150

General Data

Supply voltage ²⁾	VDC	2,5 ... 15
Insulation resistance ³⁾	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, with cable and plug	grams	998

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

¹⁾ Up to serial number 0004682811 (up to year of construction 2015) the bridge resistance of the load cells is 350 Ω (F_x , F_y) resp. 700 Ω (M_z). Please mind the first calibration!

²⁾ With UPS module 9 ... 12 VDC

³⁾ All wires to load cell housing, measured with 500 VDC

Application

Type M506A6A... 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.

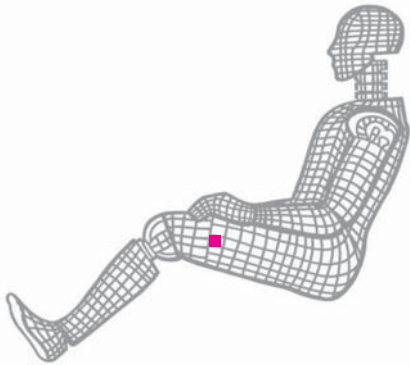


Fig. 1: Dummy application, location femur

Included Accessories

- None

Optional Accessories

- Add. label, customized
- UPS module
- Add. shunt

Type No.
M015KABID
on request
on request

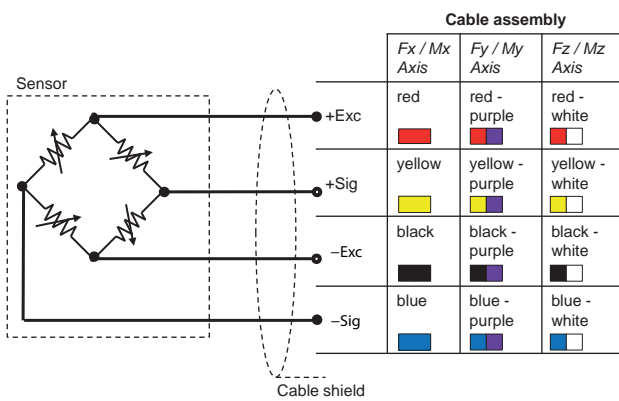


Fig. 2: Cable assembly

Type M506A6A

Design

Standard	BM
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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	#
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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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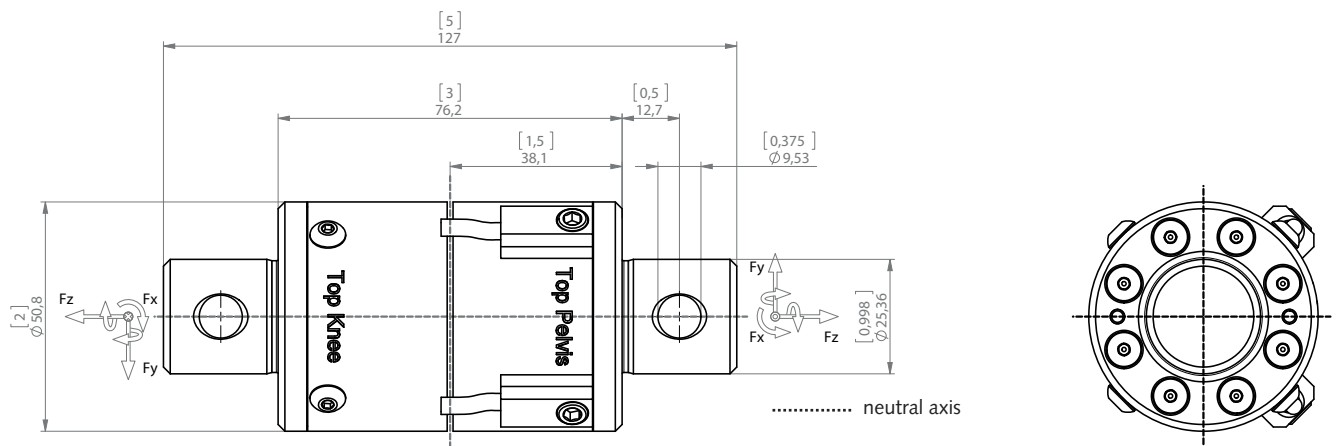


Fig. 3: Dimensions in mm