

# Femur Load Cell

Type M505A1A...

## Uniaxial

The Type series M505A1A... is designed to measure forces in the femur of the crash test dummies HIII-5 % (HF), HIII-50 % (H3), and HIII-95 % (HM).

- Uniaxial ( $F_z$ )
- UPS module integrable
- Low linearity errors and hysteresis
- Kistler system cabling
- Polarities according to SAE J211/1

### Description

The load cell is made of a deformation body that is affected by forces. Those mechanical forces 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.

### 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.



### Technical Data

Measuring range	kN	13,5
Bridge output voltage (typ.)	mV/V	1,4
Sensitivity (typ.)	$\mu\text{V}/\text{V}/\text{kN}$	104
Bridge resistance	$\Omega$	350
Ultimate load, static	%	150
Supply voltage <sup>1)</sup>	VDC	2,5 ... 15
Insulation resistance <sup>2)</sup>	G $\Omega$	>10
Operating temperature range	$^{\circ}\text{C}$	-20 ... 80
Storage temperature range	$^{\circ}\text{C}$	-30 ... 90
Amplitude non-linearity (typ.)	%	<0,5
Hysteresis (typ.)	%	<0,5
Weight	grams	635

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

<sup>1)</sup> With UPS module 9 ... 12 VDC

<sup>2)</sup> All wires to load cell housing, measured with 500 VDC

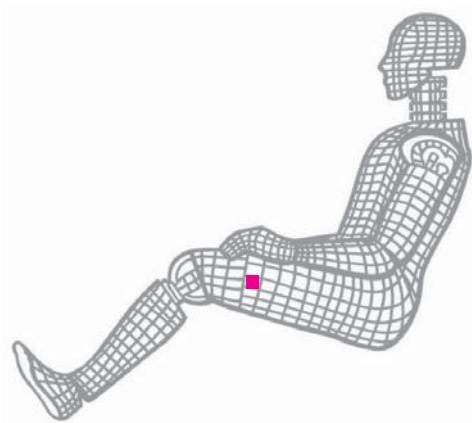


Fig. 1: Dummy application, location femur

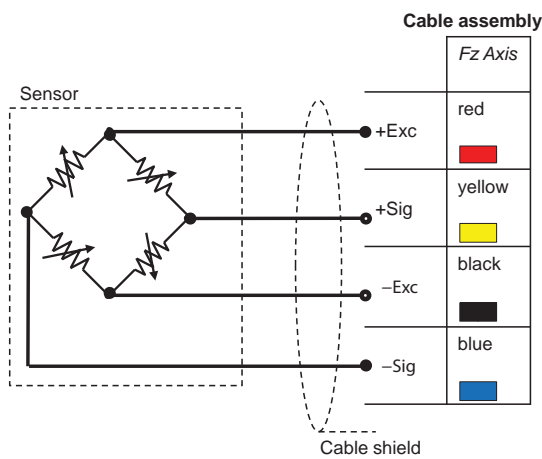


Fig. 2: Cable assembly

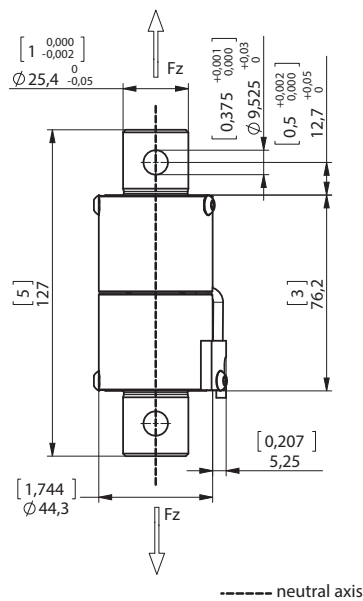


Fig. 3: Dimensions in mm

### Included Accessories

- None

### Optional Accessories

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

Type No.  
M015KABID  
on request  
on request

### Ordering Key

Type M505A1A		
<b>Design</b>	Standard	BM
<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	-#

M505A1A\_000-781e-11.15