

Upper Tibia Load Cell

Type M55235A...

Five-axial

Typ M55235A... is designed to measure forces and moments in the upper tibia of the crash test dummies Thor-M (TH) and Thor-LX.

- Five-axial (F_x , F_y , F_z , M_x , M_y)
- 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 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	11	11	11		
	N·m				400	400
Bridge output voltage (typ.)	mV/V	2,0	2,0	1,0	2,8	2,8
Sensitivity (typ.)	$\mu\text{V}/\text{V}/\text{kN}$	180	180	90		
	$\mu\text{V}/\text{V}/\text{N}\cdot\text{m}$				8,0	8,0
Bridge resistance	Ω	350	350	700	350	350
Ultimate load, static	%	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	500

All specifications are typical at 25 $^{\circ}\text{C}$ and rated at 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

Type M55235A... 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. If tibia load cells are mounted in a dummy, the dummy must be assembled with Thor LX legs.



Fig. 1: Instrumented Thor LX leg

Included Accessories

- Mounting screws, imperial 1/4-28 UNF, 4 units

Type No.

on request

Optional Accessories

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

Type No.

M015KABID

M015KABID

Ordering Key

		Type M55235A				
Design						
Standard	SM					
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	-#					

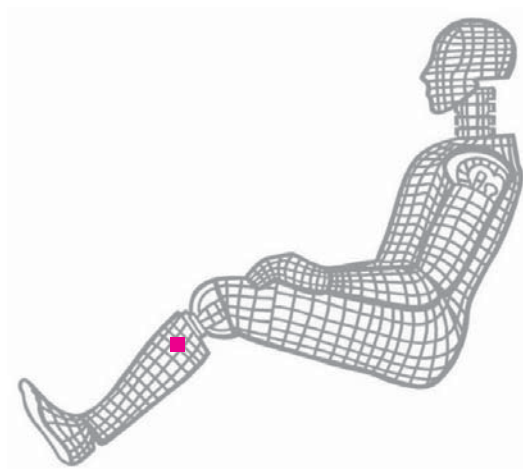


Fig. 2: Dummy application, location upper tibia

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