

# Thoracic Spine Load Cell

Type M56495A...

## Five-axial

Type M56495A... measures forces and moments in the thoracic spine of the dummy type Thor-M (TH).

- Five-axial ( $F_x$ ,  $F_y$ ,  $F_z$ ,  $M_x$ ,  $M_y$ )
- 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		$F_x$	$F_y$	$F_z$	$M_x$	$M_y$
Measuring range	kN	13,35	13,35	17,8		
	N·m				680	900
Bridge output voltage (typ.)	mV/V	2,0	2,0	1,1	1,4	1,6
Sensitivity (typ.)	$\mu\text{V}/\text{V}/\text{kN}$	150	150	60		
	$\mu\text{V}/\text{V}/\text{N}\cdot\text{m}$				2	1,7
Bridge resistance	$\Omega$	350	350	700	700	700
Ultimate load, static	%	150	150	150	150	150

### General Data

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.)	%	<1
Hysteresis (typ.)	%	<1
Channel cross talk	%	<5
Bridge zero output (typ. / max.)	mV/V	0,01 / 0,03
Weight, without cable	grams	1 013

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

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**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.

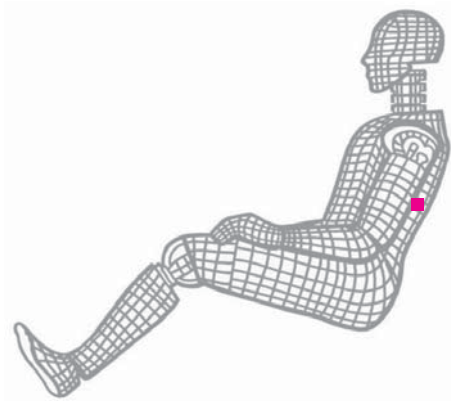


Fig. 1: Dummy application, location thoracic spine

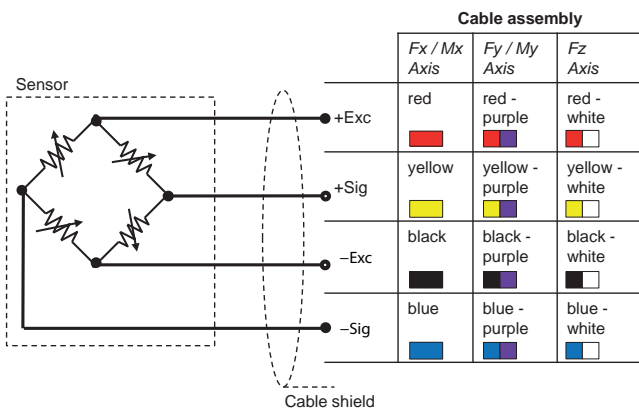


Fig. 2: Cable assembly

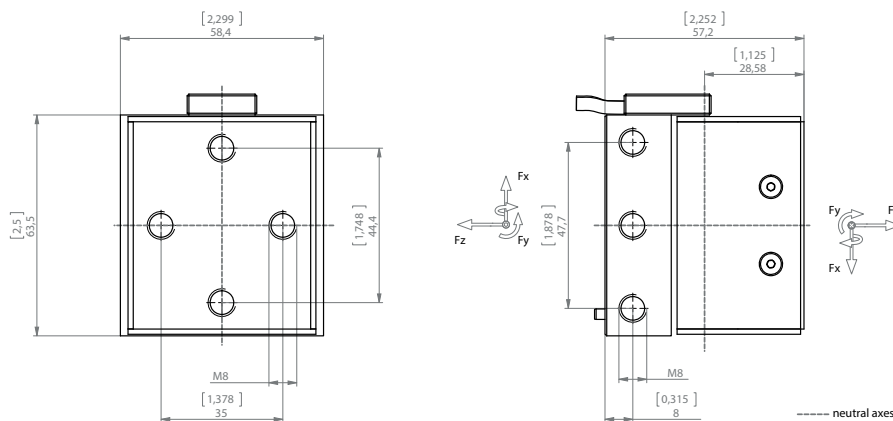


Fig. 3: Dimensions in mm (with mounting block)

**Included Accessories**

- Mounting block

**Art. No.**

on request

**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 M56495A

**Design**

Standard	VM
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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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