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Clavicle Load Cell

Type M53894A...

Four-axial

Type M53894A... is designed to measure forces and moments in the clavicle of the crash test dummy Thor-M (TH).

- Four-axial (F_x (M), F_z (M), F_x (L), F_z (L))
- 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

Axial Data		F_x (M)	F_z (M)	F_x (L)	F_z (L)
Measuring range	kN	2	2	2	2
Bridge output voltage (typ.)	mV/V	0,7	0,7	0,7	0,7
Sensitivity (typ.)	µV/V/kN	340	340	340	340
Bridge resistance	Ω	700	700	700	700
Ultimate load, static	%	150	150	150	150

General Data		
Supply voltage[1)]	VDC	2,5 ... 15
Insulation resistance[2)]	GΩ	>10
Operating temperature range	°C	–20 ... 80
Storage temperature range	°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	320

All specifications are typical at 25 °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

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.

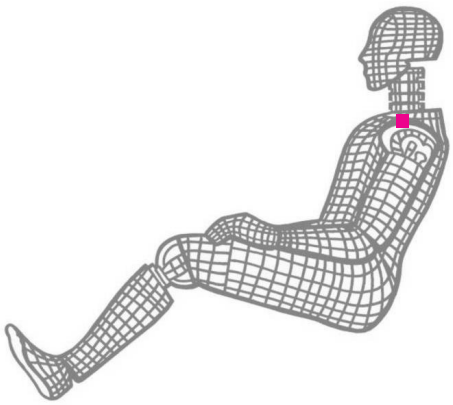
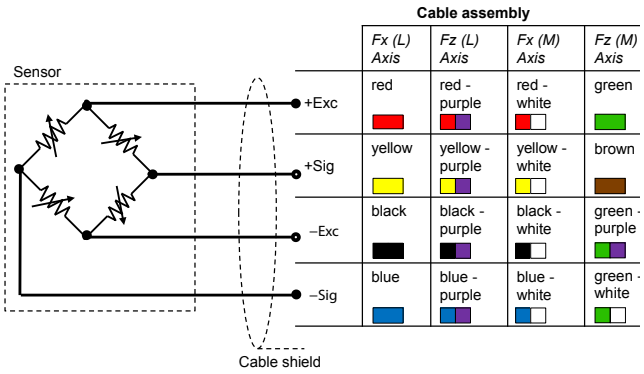


Fig. 1: Dummy application clavicle



	Fx (L) Axis	Fz (L) Axis	Fx (M) Axis	Fz (M) Axis
+Exc	red	red - purple	red - white	green
+Sig	yellow	yellow - purple	yellow - white	brown
–Exc	black	black - purple	black - white	green - purple
–Sig	blue	blue - purple	blue - white	green - white

Fig. 2: Cable assembly

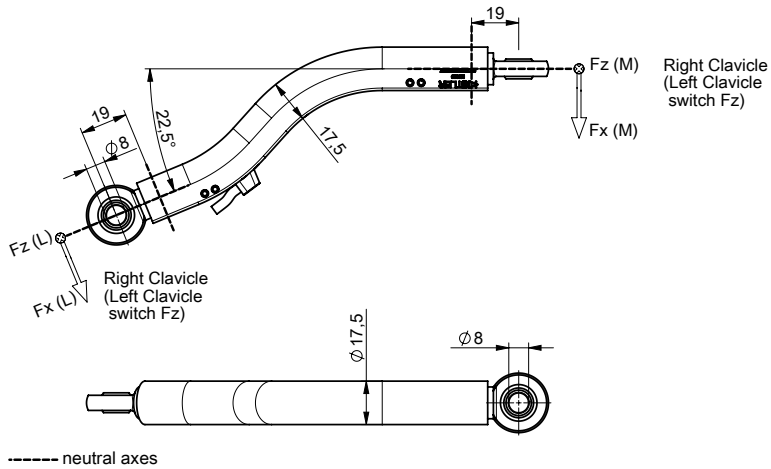


Fig. 3: Dimensions in mm

Included Accessories

- None

Optional Accessories	Type No.
• Add. label, customized	M015KABID
• UPS module	on request
• Add. shunt	on request

Ordering Key

Type M53894A ☐☐☐☐☐☐

Design

left	**CM**
right	**ZM**

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	**-#**