

Upper and lower neck load cell

Type M5555xA...

Triaxial, six-axial

The load cells of Type M5555xA... are designed to measure forces and moments in the upper and lower neck of the crash test dummies WorldSID-5 % (W5) and WorldSID-50 % (WS).

- Triaxial (F_y, F_z, M_x); 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 elements on which forces are transmitted. The mechanical deformation element, applied with strain gage, serves for mechanical electrical deformation. The forces 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		$F_x^{1)}$	F_y	F_z	M_x	$M_y^{1)}$	$M_z^{1)}$
Measuring range	kN	10	10	12			
	N·m				300	300	200
Bridge output voltage (typ.)	mV/V	2,6	2,6	1,2	1,95	1,95	2,2
Sensitivity (typ.)	$\mu\text{V/V/kN}$	260	260	100			
	$\mu\text{V/V/N}\cdot\text{m}$				6,5	6,5	11
Bridge resistance	Ω	700 ²⁾	700 ²⁾	700	350	350	350 ²⁾
Ultimate load, static	%	150	150	150	150	150	150

General data

Supply voltage ³⁾	VDC	2,5 ... 15
Insulation resistance ⁴⁾	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	0,02 / 0,03
Weight (without cable)	grams	357

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

¹⁾ Available only in six-axial design

²⁾ Up to serial number 0004544029 (up to year of construction 2015) the bridge resistance of the load cells is 700 Ω (F_x, F_y) resp. 350 Ω (M_z). Please mind the first calibration!

³⁾ With UPS module 9 ... 12 VDC

⁴⁾ All wires to load cell screen, 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.

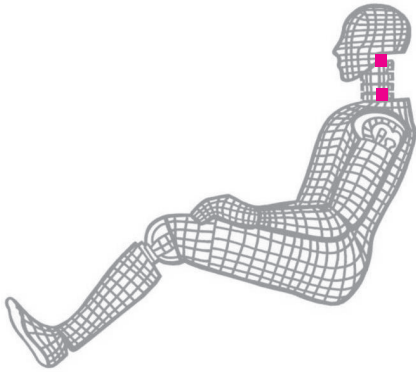


Fig. 1: Dummy application, location upper & lower neck

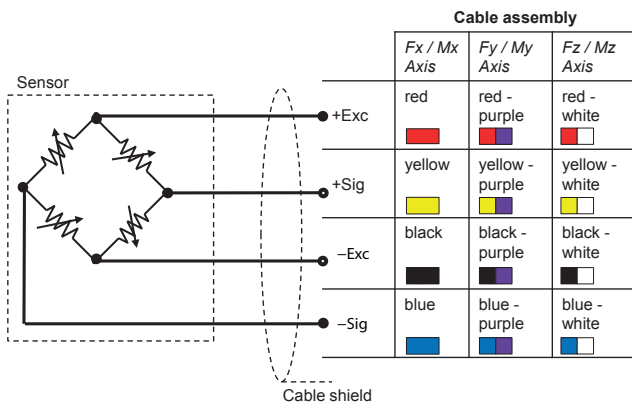


Fig. 2: Cable assembly

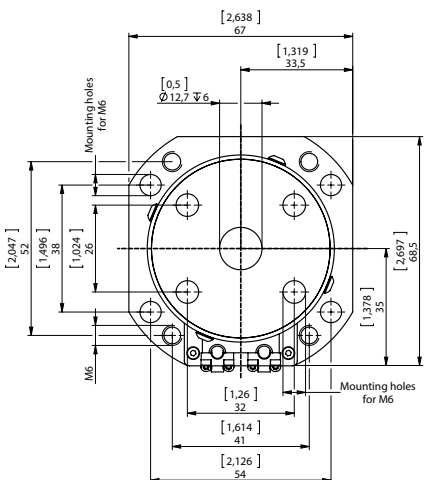
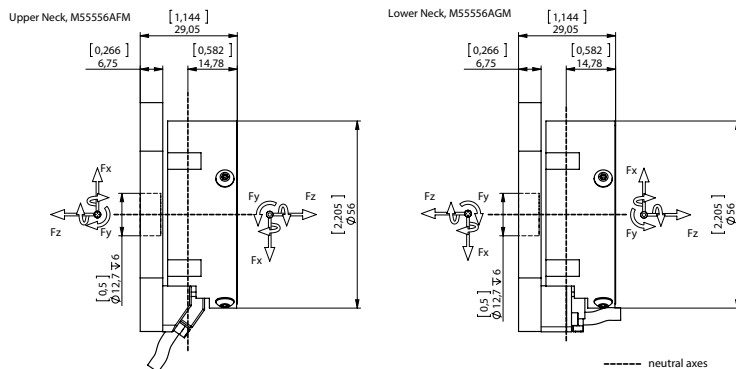


Fig. 3: Dimensions in mm



Optional accessories

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

Type No.

M015KABID
on request
M015KABID
on request

Ordering key

Type M5555

Number of axes

Triaxial	3
Six-axial	6

Design

Upper neck	AFM
Lower neck	AGM

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. type assignment, as per TP-600	-#

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