

# Shoulder Load Cell

Type M536A3A...

## Triaxial

Type M536A3A... is designed to measure forces in the shoulder of the crash test dummies E1 and E2.

- Triaxial ( $F_x$ ,  $F_y$ ,  $F_z$ )
- Measuring range 4 ... 8 kN
- ID modules available
- Low linearity error and hysteresis error
- 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 effectiveness of the load cell resembles the behavior of a spiral spring. The forces to be measured create mechanical stretches and buckling in the gaging member.

Line-up of equivalent load cells:

	Type
Kistler	M536A3A...
FTSS	IF-317
Denton	3155

Design shoulder:

	Type
Kistler standard	M536A3AKM...
Left	M536A3A4M...
Right	M536A3A5M...

Because of weight and balance reasons, the particular not instrumented side of the dummy is assembled with the adequate replacement of the dummy kit.

In order to avoid linearity errors, the deformation paths are constructively held small (high stiffness). 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 ID modules, either a UPS module (Universal Parameter Memory) or a Dallas module can be chosen for this functionality. These modules are 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		$F_x$	$F_y$	$F_z$
Measuring range	kN	4	8	4
Bridge output voltage (typ.)	mV/V	2,3	1,8	2,3
Sensitivity (typ.)	$\mu\text{V}/\text{V}/\text{kN}$	575	225	575
Bridge resistance	$\Omega$	350	700	350
Ultimate load, static	%	150	150	150
Supply voltage				
without ID module	VDC	5 ... 15		
with ID module	VDC	9 ... 12		
Insulation resistance <sup>1)</sup>	M $\Omega$	>90		
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	215		

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

<sup>1)</sup> All wires to screen (GND), measured with 10 VDC

M536A3A\_000-785e-12.11

**Application**

Type M536A3A... is designed to measure forces in the shoulder of the crash test dummies E1 and E2.

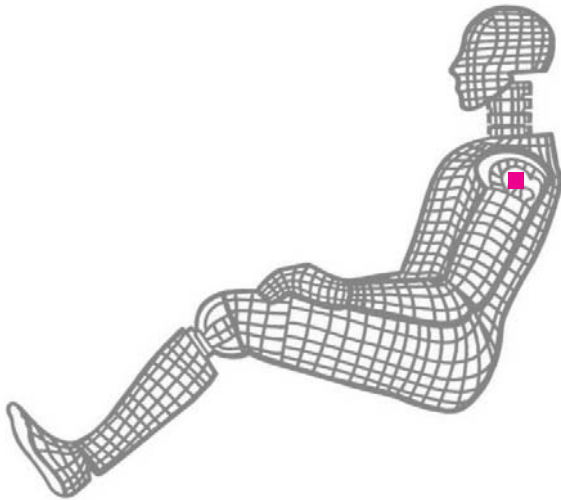


Fig. 1: Dummy application, location shoulder

**Ordering Key**

Type M536A3A

**Design**

Kistler Standard	KM
Left	4M
Right	5M

**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	-#

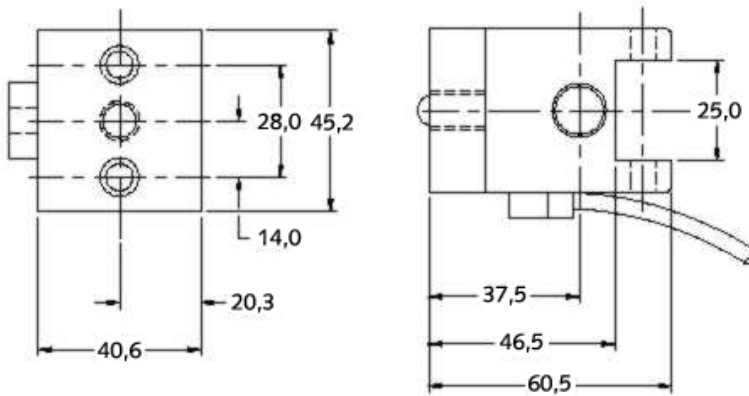


Fig. 2: Dimensions in mm

**Included Accessories**

- None

**Optional Accessories**

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

**Type No.**

M015KABID  
on request  
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