

Back Plate Load Cell

Type M540A4A...

Four-axial

Type M540A4A... is designed to measure forces and moments between back plate and thoracic spine in the crash test dummies E1 and E2. If the dummy is assembled with a rip extension, load cell Type M54014A... must be used.

- Four-axial (F_x , F_y , M_y , M_z)
- ID module integrable
- Low linearity and hysteresis
- 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.

Line-up of equivalent load cells:

	Type
Kistler	M540A4A...
FTSS	IF-437
Denton	3795

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	M_y	M_z
Measuring range	kN	3	3		
	N·m			160	160
Bridge output voltage	mV/V	1,1	1,1	1,5	0,8
Sensitivity	$\mu\text{V/V/kN}$	360	360		
	$\mu\text{V/V/N}\cdot\text{m}$			9,3	5
Bridge resistance	Ω	700	350	700	700
Ultimate load	%	150	150	150	150
Supply voltage	without ID module	VDC			
	with ID module	VDC			
Insulation resistance ¹⁾	M Ω	>90			
Operating temperature range	$^{\circ}\text{C}$	-20 ... 80			
Storage temperature range	$^{\circ}\text{C}$	-30 ... 90			
Amplitude non-linearity	%	<1			
Hysteresis	%	<1			
Channel cross talk	%	<5			
Weight	grams	3 100			

All specifications are typical at 25 °C and rated at 10 V sensor supply voltage, unless otherwise specified.

¹⁾ All wires to screen (GND), measured with 10 VDC

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Application

Type M540A4A... is designed to measure forces and moments between back plate and thoracic spine in the crash test dummies E1 and E2.

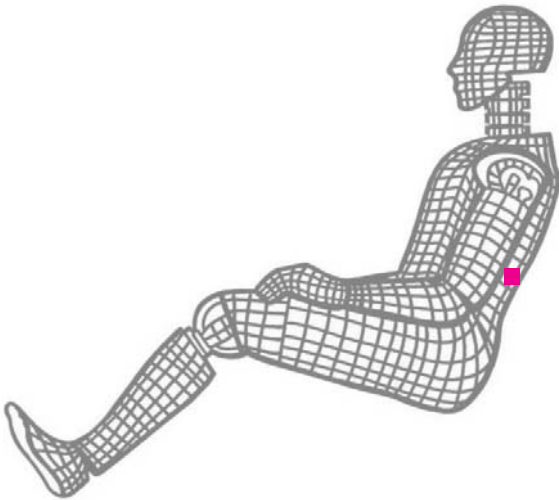


Fig. 1: Dummy application, location where the load cell is placed

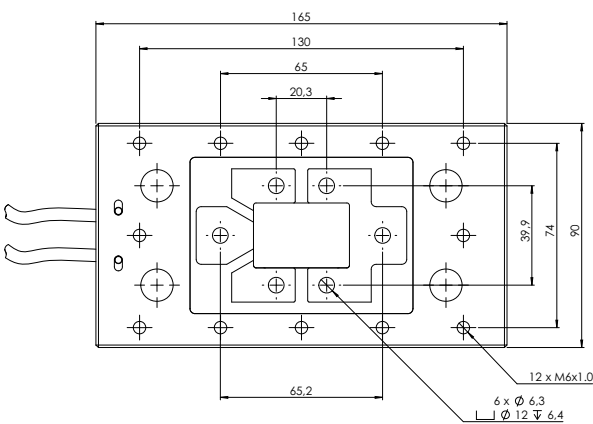
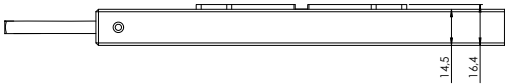


Fig. 2: Dimensions in mm

Included Accessories

- None

Optional Accessories

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

Type No.

M015KABID
M015KABID
on request
on request

Ordering Key

Type M540A4A		
Design	Standard	QM
Cable Length before Electronics	0 cm	0
	<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	0
	<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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