

Back Plate Load Cell

Type M54014A...

Four-axial

Type M54014A... is designed to measure forces and moments between back plate and thoracic spine in the crash test dummy EuroSID-2 with Rib Extension (ER) in case the dummy is equipped with rib extensions. If there are no rib extensions, Type M540A4A... can alternatively be used.

- Four-axial (F_x , F_y , M_y , M_z)
- UPS module integrable
- Low linearity and hysteresis
- Kistler system cabling
- Notches for rib extensions
- 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 effectiveness of the load cell resembles the behavior of a spiral spring. The forces and moments to be measured create mechanical stretches and buckling in the gaging member. The sensor has notches on the backside that are used for rib extensions.

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 modules. Customized cable lengths and connectors with specific pin assignments are optionally available.



Front side



Back side with notches for rib extensions

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	1,05	1,05	1,2	0,8
Sensitivity	$\mu\text{V}/\text{V}/\text{kN}$	350	350		
	$\mu\text{V}/\text{V}/\text{N}\cdot\text{m}$			7,5	5,0
Bridge resistance	Ω	700	350	700	700
Ultimate load	%	150	150	150	150
Supply voltage ¹⁾	VDC	2,5 ... 15			
Insulation resistance ²⁾	G Ω	>10			
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⁾ With UPS module 9 ... 12 VDC

²⁾ All wires to screen (GND), measured with 10 VDC

Application

Type M54014A... 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.

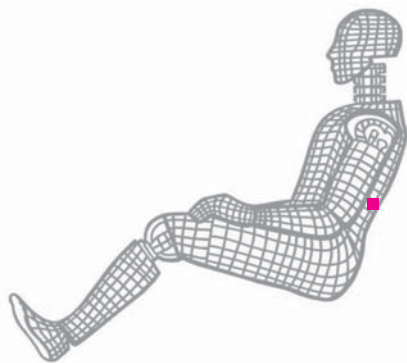


Fig. 1: Dummy application, location where the load cell is placed

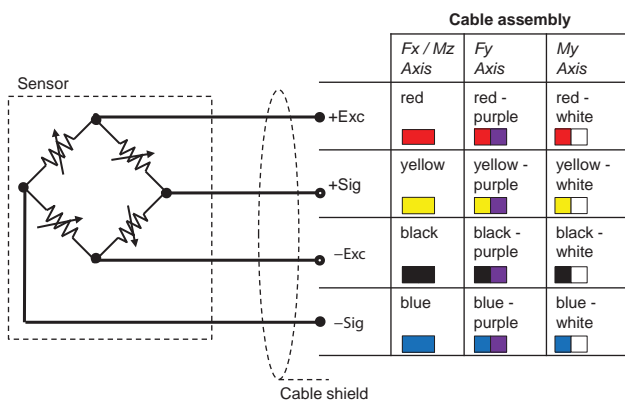


Fig. 2: Cable assembly

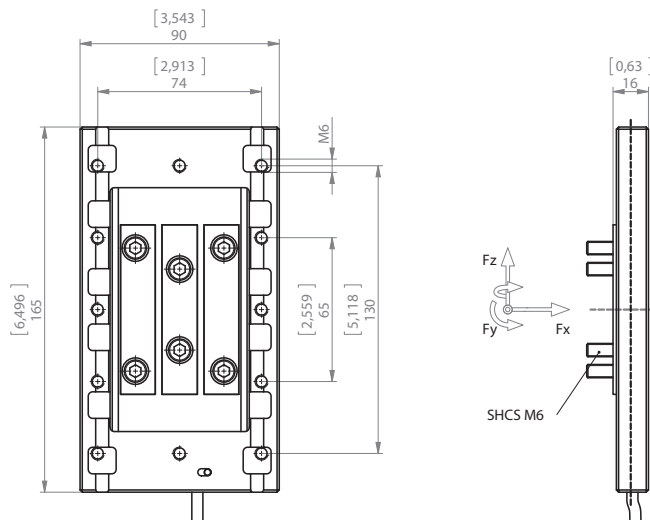


Fig. 3: Dimensions in mm

Included Accessories

- None

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
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on request

Ordering Key

Type M54014A		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design	Standard	QM				
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 fore-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	-#				

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