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# Quartz modal force sensor with IEPE output, 22 ... 22 000 N

The 9712B... series of force sensing load cells measure dynamic events in a wide variety of applications.

Available in five measuring ranges from 5 lbf to 5 000 lbf and contained in a conventional load cell style housing, all models are capable of measuring compression and tension forces.

- Low impedance, voltage mode
- Rugged quartz sensor; stainless steel case
- · Wide measuring range for compression and tension
- Uses standard low cost cables
- Hermetically sealed
- Conforming to CE

## Description

Series 9712B... quartz, piezoelectric load cells offer a wide selection of force measurement ranges for compression and tension. Minute incremental forces may be measured at any level in these ranges. These force sensors offer high sensitivity as well as high rigidity and are capable of withstanding compression overloads from 20% to 400%. High force range units allow static calibration and short-term static response when used in a constant ambient temperature. The low profile load cell incorporates a built-in impedance converter, allowing use in contaminated environments such as dust, dirt or moisture without adverse effects on the signal transmission. Standard, low-cost cables of any length can be used and will not cause signal interference.

An internal microelectronic Piezotron signal conditioning circuit converts the charge developed in the quartz element as a result

## Technical data

63 [16, 0] R.37 [9,4]	.63 [16.0] [9,9] [9,9] [9,9] [0,0][0] [0,0][0,0][0] [0,0][0][0,0][0][0,0][0][0][0,0][0][0,0][0][	KISTLER
.500 +/005 [12,7 +/- ,13 ]	0.38 MTG SURFACE [9.7]	
-•	← ∅ .40 M TG. SURFACE [ 10,2 ]	

Type 9712B...

Dimensions are shown in in. [mm], unless otherwise noted.

of the sensor being subjected to an applied force, into a useable high level voltage output signal at a low impedance level. Power to the 9712B... series load cells can be provided by any Kistler 5100 series coupler or by any industry standard voltage mode IEPE (Integral Electronic Piezo-Electric) power supply/coupler.

## Application

These load cells are ideally suited for force applications where high sensitivity, high rigidity and fast response are required. They can be used with shakers for modal analysis, impact testing, machine tool measurements, or various automotive, aerospace and robotic testing.

Туре	Unit	9712B5	9712B50	9712B250	9712B500	9712B5000	
Range compression	lbf	5	50	250	500	5 000	
5 1	Ν	22	220	1 100	2 200	2200	
tension	lbf	5	50	250	5	00	
	Ν	22	220	1 100	2 200		
Threshold nom.	lbf	0.0001	0.001	0.005	0.01	0.1	
	Ν	0.0004	0.004	0.022	0.04	0.44	
Sensitivity nom.	mV/lbf	800	100	20	10	1	
	mV/N	182	23	5	2	0.2	
Linearity	%FSO	±1					
Rise Time 10 90%	μs			<6			
Time constant nom.	S	60	540	820	1 800		
Rigidity	lbf/µin			5			
	N/µm	875					
Resonant frequency nom.	kHz			70			
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This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

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#### Technical data (continued)

Туре	Unit	9712B5	9712B50	9712B250	9712B500	9712B5000
Shock (1 ms pulse) max.	g			<10 000		,
Temperature coefficient of sensitivity	%/°F %/°C			0.02 0.02		
Operating temperature range	°F °C			-58 248 - 50 120		
Storage	°F °C			-94 320 -70 160		
Output						
Voltage, F.S., nom.	V			5		
Impedance	Ω			<100		
Supply						
Constant current	mA			4		
Ripple max.	mVrms	25				
Voltage	VDC	20 32				
Impedance min.	kΩ			100		
Construction						
Sensing element	type	quartz				
Case material				17-4 PH		
Sealing	type	hermetic				
Connector	type			10-32 neg.		
Weight	grams			19		
Mounting torque	lbf-in	18				
	N⋅m			2		

1 g = 9.80665 m/s<sup>2</sup>, 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.113 N·m

#### Mounting

Reliable and accurate measurements require that the mounting surface be clean and flat. All models are supplied with 2 x 10-32 mounting studs for attachment to the test structure. When several units are installed between two plates, the mounting surfaces in contact with the cells must be plane-parallel to prevent stresses induced into the individual cells. The Operating Instruction Manual for the 9712B... series provides detailed information regarding mounting surface preparation.

### **Related products**

Type 9212 charge mode, high sensitivity load cell for low force range applications

Ordering Information



3 - 5100	series coupler or
5010B	dual mode charge amplifier

4 - 1511ASP output cable, BNC pos. to BNC pos.

Accessories included	Туре	
2 x 10-32 mounting studs	8402	
2 x M6x1 mounting studs	8411	
Optional Accessories	Туре	
Impact Pad	900A1	
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