

# Quartz

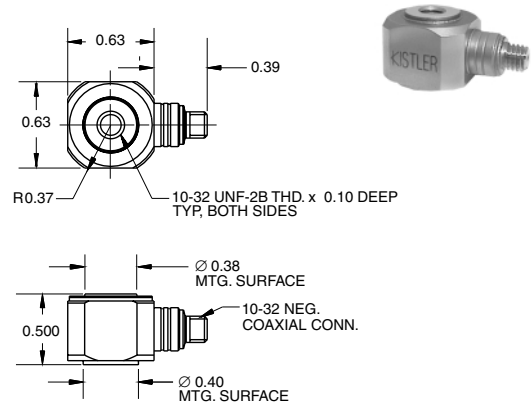
Type 9712

## High Impedance Load Cells

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 5000 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 & tension
- Use 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 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 9712 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.

### Technical Data

Type	Units	9712B5	9712B50	9712B250	9712B500	9712B5000
Range compression	lbf	5	50	250	500	5000
tension	lbf	5	50	250	500	500
Threshold nom.	lbf	0.0001	0.001	0.005	0.01	0.1
Sensitivity nom.	mV/lbf	800	100	20	10	1
Non-linearity	%FSO	1	1	1	1	1
Rise Time 10 ... 90%	µs	<6	<6	<6	<6	<6
Time Constant nom.	s	60	540	820	1800	1800
Rigidity	lbf/µin	>5	>5	>5	>5	>5
Natural Frequency nom.	kHz	70	70	70	70	70

continued...

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### Technical Data

Type	Units	9712B5	9712B50	9712B250	9712B500	9712B5000
Shock Limit (1ms pulse) max.	g	<10000	<10000	<10000	<10000	<10000
Temperature Coefficient of Sensitivity	%/°F	-0.009	-0.009	-0.009	-0.009	-0.009
Temperature Range Operating	°F	-60 ... 250	-60 ... 250	-60 ... 250	-60 ... 250	-60 ... 250
Storage	°F	-95 ... 300	-95 ... 300	-95 ... 300	-95 ... 300	-95 ... 300
Output:						
Voltage full scale nom.	V	5	5	5	5	5
Impedance	Ω	<100	<100	<100	<100	<100
Power Supply:						
Constant Current	mA	4	4	4	4	4
Ripple max.	mVrms	25	25	25	25	25
Voltage	VDC	20 ... 32	20 ... 32	20 ... 32	20 ... 32	20 ... 32
Impedance min.	kΩ	100	100	100	100	100
Construction:						
Sensing Element	type	quartz	quartz	quartz	quartz	quartz
Housing/Base	material	17-4 PH	17-4 PH	17-4 PH	17-4 PH	17-4 PH
Sealing - housing/connector	type	hermetic	hermetic	hermetic	hermetic	hermetic
Connector	type	10-32 neg.	10-32 neg.	10-32 neg.	10-32 neg.	10-32 neg.
Weight	grams	19	19	19	19	19
Mounting Torque	lbf-in	18	18	18	18	18

1 g = 9.80665 m/s<sup>2</sup>, 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.1129 Nm

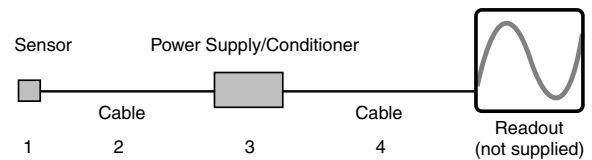
### Mounting

Reliable and accurate measurements require that the mounting surface be clean and flat. All models are supplied with two 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 plain-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

9212	charge mode, high sensitivity load cell for low force range applications
9222	charge mode version of the 9712B series (for high force range applications)

### Ordering Information



sp = specify cable length in meters

X = 5, 50, 250, 500, 5000 lbf

- 1- 9712B(X) load cell, 50 pC/lbf or
- 2 - 1761Bsp cable, 10-32 pos. to BNC pos.
- 3 - 5100 series coupler or
- 5010B dual mode charge amplifier
- 4 - 1511sp output cable, BNC pos. to BNC pos.

### Supplied Accessories

8402 (2) 10-32 mounting studs

### Optional Accessories

900A1 impact pad