KISTLER

measure. analyze. innovate.

K-Shear® Accelerometers

Type 8702B500..., 8704B500...

General Purpose, Voltage Mode Accelerometers

Small, relatively light weight general purpose accelerometers for vibration measurements in wide range of applications. Available in high and low operating temperature versions; two with a ground isolated option, these accelerometers feature a rugged, hermetically sealed construction.

- Low impedance, voltage mode
- Quartz-shear sensing elements
- Ultra-low base strain
- Minimal thermal transient response
- Lightweight, hermetically sealed titanium case
- Conforming to CE

Description

The Type 8702B500 series side connector and Type 8704B500 top connector accelerometer series use a unique shear mode sensing element made of stable quartz crystals. The quartz sensing elements afford excellent long-term stability that ensure repeatable, accurate measurements for many years. Additionally the shear element design provides low transverse sensitivity along with an insensitivity to base strain and thermal transients.

All units are hermetically sealed and are constructed entirely of titanium or a combination of titanium and stainless steel. An internal circuit Piezotron® impedance converter provides a high signal level at low impedance output.

Models identified with an M1 and M3 are ground isolated versions. The Type 8702B500M5 extends the operating temperature range to 165 °C while the Type 8702B500M8 operates at a low cryogenic temperature of –195 °C.
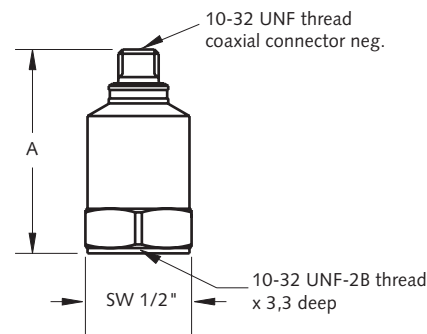
Application

All types are designed for general purpose vibration measurement in a laboratory or industrial environment. They can be used for environmental testing (with or without temperature cycling), ESS, vehicle tests, automotive NVH testing, rotating machinery vibration analysis.
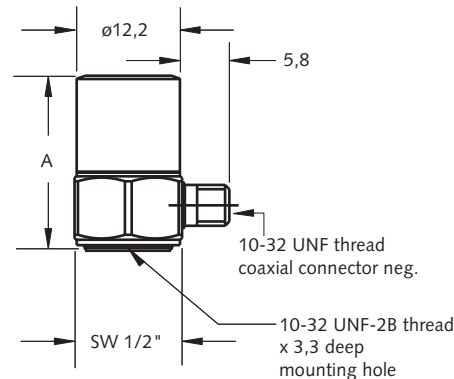
Type 8702B500…

Dim	Type 8702B500	8702B500M1,M3	8702B500M5/M8
A	16	17,0	20,3

Type 8704B500…

Dim	Type 8704B500	Type 8704B500M1/M3
A	21,1	21,6

Accessing TEDS Data

Accelerometers with a "T" suffix are variants of the standard version incorporating the "Smart Sensor" design. Viewing an accelerometer's data sheet requires an Interface/Coupler such as Kistler's Type 5134B… or 5000M04 with TEDS Editor software. The interface provides negative current excitation (reverse polarity) altering the operating mode of the PiezoSmart® sensor allowing the program editor software to read or add information contained in the memory chip.

8702B_000-238e-03.10

KISTLER

measure. analyze. innovate.

Technical Data

Specification			Unit	Type 8702B500	Type 8704B500
Acceleration range			g	±500	±500
Acceleration limit			gpk	±1 000	±1 000
Transverse acceleration limit			gpk	±1 000	±1 000
Threshold nom. (noise 130 µVrms)			grms	0,01	0,01
Sensitivity, ±5 %			mV/g	10	10
Resonant frequency mounted, nom.			kHz	54	54
	Type	8702B500M5, M8	kHz	73	–
Frequency response, ±5 %	M1 (–5…10 %)		Hz	1 … 10 000	1 … 10 000
	M3		Hz	0,5 … 10 000	0,5 … 10 000
	Type	8702B500M5, M8	Hz	2 … 7 000	–
Amplitude non-linearity			%FSO	±1	±1
Time constant nom.			s	1	1
	M3		s	2	2
	Type	8702B500M5, M8	s	0,5	–
Transverse sensitivity nom., (max. 3)			%	1,5	1,5

Environmental

			Unit	Type 8702B500	Type 8704B500
Base strain sensitivity @ 250 µε			g/µε	0,01	0,01
Random vibration max.			grms	2 000	2 000
Shock limit (1 ms pulse)			gpk	5 000	5 000
Temperature coefficient of sensitivity			%/°C	–0,06	–0,06
Operating temperature range			°C	–55 … 120	–55 … 120
	Type	8702/8704B500T	°C	–55 … 100	–55 … 100
	Type	8702B500M5	°C	–55 … 165	–
	Type	8702B500M8	°C	–195 … 120	–
Storage temperature range			°C	–75 … 150	–75 … 120

Output

	Unit	Type 8702B500	Type 8704B500
Bias nom.	VDC	11	11
Impedance	Ω	<100	<100
Voltage full scale	V	±5	±5
Current	mA	2	2

Source

		Unit	Type 8702B500	Type 8704B500
Voltage		VDC	20 … 30	20 … 30
Constant current	Type (8702B500M5/M8 = 2 … 18)	mA	4	4
Impedance min.		kΩ	100	100

Construction

			Unit	Type 8702B500	Type 8704B500
Sensing element			Type	quartz-shear	quartz-shear
Case/base			material	Titanium	Titanium
Degree of protection case/connector (EN 60529)				IP68	IP68
Connector			Type	10-32 neg.	10-32 neg.
Ground isolated	Type	8702/8704B500M1, M3, M5		yes	yes
Weight			grams	8,2	7,1
	Type	8702/8704B500M…	grams	9,2	7,6
Mounting (10-32 thd. x 3,3)			Type	stud	stud
Mounting torque	Type	8702B500M5, M8	N·m	2	2

1 g = 9,80665 m/s², 1 Inch = 25,4 mm, 1 gram = 0,03527 oz, 1 lbf-in = 0,1129 N·m

KISTLER
measure. analyze. innovate.

Mounting

A threaded 10-32 UNF stud provides positive attachment of the accelerometer to the test structure. Reliable and accurate measurements require that the mounting surface be clean and flat. The operating instruction manual for the Type 8702B… and 8704B… series accelerometers provides detailed information regarding mounting surface preparation.
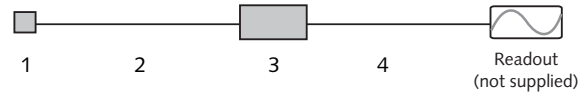
Included Accessories

	Type
• 10-32 mounting stud	8402
• Mounting stud, 10-32 to M6; shipped only outside N.A.	8411

Optional Accessories

	Type
• Mounting magnet	8452A
• Triaxial mounting cube	8502

Measuring Chain

		Type
1	Low impedance sensor	8702/04B500…
2	Sensor cable, 10-32 pos. to BNC pos.	1761B…
3	Power supply/signal conditioner	51…
4	Output cable, BNC pos. to BNC pos.	1511

1   2   3   4   Readout
(not supplied)

Ordering Key

Type 8702B ☐ ☐ ☐

Range

±500 g	500

Variant

Standard	–
Ground isolated	M1
Long time constant and ground isolated	M3
High temperature	M5
Low temperature	M8

TEDS Templates

Standard	–
Default, IEEE 1451.4 V0.9 Template 0 (UTID 1)	T
IEEE 1451.4 V0.9 Template 24 (UTID 116225)	T01
LMS Template 117, free format Point ID	T02
LMS Template 118, Automotive Format (Field 14 Geometry = 0)	T03
LMS Template 118, Aerospace Format (Field 14 Geometry =1)	T04
P1451.4 v1.0 template 25 – Transfer Function Disabled	T05
P1451.4 v1.0 template 25 – Transfer Function Enabled	T06

Ordering Key

Type 8704B ☐ ☐ ☐

Range

±500 g	500

Variant

Standard	–
Ground isolated	M1
Long time constant and ground isolated	M3

TEDS Templates

Standard	–
Default, IEEE 1451.4 V0.9 Template 0 (UTID 1)	T
IEEE 1451.4 V0.9 Template 24 (UTID 116225)	T01
LMS Template 117, free format Point ID	T02
LMS Template 118, Automotive Format (Field 14 Geometry = 0)	T03
LMS Template 118, Aerospace Format (Field 14 Geometry =1)	T04
P1451.4 v1.0 template 25 – Transfer Function Disabled	T05
P1451.4 v1.0 template 25 – Transfer Function Enabled	T06

8702B_000-238e-03.10