

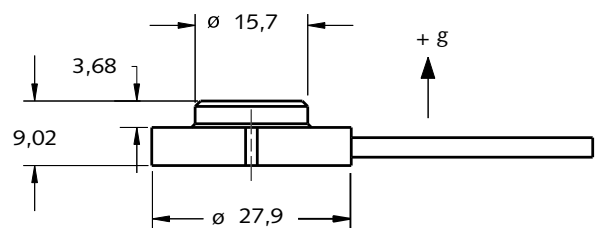
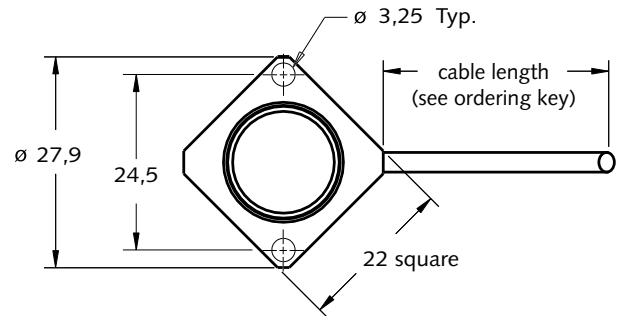
# K-Beam® Accelerometer

Type 8305B...

## Light Weight, Low Profile Capacitive Accelerometer

The 8305B... capacitive accelerometer series measures single axis acceleration in a steady state or low-level, low-frequency environment. Featuring high sensitivity and low thermal response characteristics, This accelerometer series is available in two measuring ranges, single ended or differential output and connector options.

- Small, lightweight variable capacitance sensing element
- Frequency response 0 ... 250Hz
- Operates from a 9-volt battery
- Wide supply voltage range up to +32VDC
- Ground isolated
- Conforming to CE



### Description

The 8305B... K-Beam accelerometer series utilizes a three layer silicon micro-machined variable capacitance sensing element which enables it to have true static response. The K-Beam capacitive accelerometer requires only a DC voltage supply (i.e. battery) for operation. They are fully calibrated sensors with all excitation and signal conditioning electronics integrated into a single package.

K-Beam accelerometers provide a high level output signal with excellent long-term stability. The 8305B... standard configuration, provides the convenience of a single polarity power supply and a single-ended output. A 2,5 volt offset is present at 0 g. The 8305B...M4 and 8305B...M7 versions add a 4-pin (pos. and neg. respectively) connector to the cable end of the standard 8305B. The 8305B...M2 version, operate from a single polarity supply and provide a differential output. When connected to a differential amplifier, the offset at 0 g is nominally 0 volts. Power can be furnished from a regulated DC power supply or from a 9-Volt alkaline battery. The K-Beam accelerometers are available either in a standard 0,5 meter length or in a user specified cable length.

### Application

The 8305B... series of units are low cost and considered general purpose types but like all K-Beam types, they measure low-level, low-frequency vibration and static acceleration. Applications include: vehicle stability control and ride analysis, structure analysis, robotics and/or platform motion control, inclination and tilt.

8305B\_000-565e-01.07

## Technical Data

Type	Unit	8305B2	8305B10	8305B25	8305B50	8305B100
Acceleration Range	g	±2	±10	±25	±50	±100
Sensitivity, ±5%	mV/g	500	100	80	40	20
Sensitivity-Differential ( 5%)	mV/g	1000	200	160	80	40
Zero g Output (5%)	mV	2500 ±125	2500 ±125	2500 ±125	2500 ±125	2500 ±80
Zero g Output-Differential (5%)	mV	0 ±25	0 ±25	0 ±25	0 ±25	0 ±160
Amplitude Non-linearity	%FSO	0,4	0,4	1	1	1
Resonant Frequency nom.	kHz	1,4	2,7	3	3,5	4,5
Frequency Response (±5%, 100 Hz Ref.)	Hz	≥200	≥180	≥300	≥500	≥500
Noise typ. (0,5 ... 100Hz)	µgrms	200	1000	1760	3620	3910
Noise Density (0...100 Hz) typ.	µgrms/√Hz	20	100	180	370	400
Phase Shift max. @ 0 Hz	degree	0	0	0	0	0
Phase Shift max. @ 10 Hz	degree	<2	<2	<1	<1	<1
Phase Shift max. @ 100 Hz	degree	<10	<10	<5	<5	<5
Phase Shift max. @ 200 Hz	degree	<25	<25	<8	<8	<8
Sensitive Axis Misalignment typ. (max.)	mrad	≤10 (≤30)	≤10 (≤30)	≤20 (≤35)	≤20 (≤35)	≤20 (≤35)
Transverse Sensitivity typ. (max. 3)	%	±1	±1	±1	±1	±1
Environmental:						
Random Vibration 20... 2000 Hz	grms	20	±2	±25	±25	±50
Shock half sine, 200 µs	gpk	3000	3000	3000	3000	3000
Temperature Coefficient Sensitivity typ. (max.)	ppm/°C	200 (320)	200 (320)	200 (400)	200 (400)	200 (400)
Temperature Coefficient Sensitivity typ. (max.)	%/°C	0.02 (0.032)	0.02 (0.032)	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)
Temperature Coefficient of Bias, typ. (max.)	mg/°C	0.2 (1)	1 (5)	5 (20)	5 (20)	10 (40)
Temperature Coefficient Offset, typ. (max.)	µV/°C	100 (500)	100 (500)	400 (1600)	200 (800)	200 (800)
Temperature Coefficient Offset-Diff, typ. (max.)	µV/°C	200 (1000)	200 (1000)	800 (3200)	400 (1600)	400 (1600)
Temperature Range Operating	°C	-40 ... 85	-40 ... 85	-40 ... 85	-40 ... 85	-40 ... 85
Temperature Range Storage	°C	-55 ... 125	-55 ... 125	-55 ... 125	-55 ... 125	-55 ... 125
Output:						
Impedance max.	Ω	40	40	40	40	40
Load Resistance min.	kΩ	10	10	10	10	10
Capacitive Load max.	pF	5000	5000	5000	5000	5000
Supply:						
Voltage	VDC	7 ... 32	7 ... 32	7 ... 32	7 ... 32	7 ... 32
Current nom.	mA	0,7	0,7	12	12	12
Construction:						
Sensing Element	type	Capactive	Capactive	Capactive	Capactive	Capactive
Housing/Base material	type	Al. hard anod.	Al. hard anod.	Al. hard anod.	Al. hard anod.	Al. hard anod.
Sealing - housing/ccable	type	epoxy	epoxy	epoxy	epoxy	epoxy
Connector	8305B..., 8305B...M2	type	int. pigtail	int. pigtail	int. pigtail	int. pigtail
	8305B...M4	type	4-Pin pos.	4-Pin pos.	4-Pin pos.	4-Pin pos.
	8305B...M7	type	4-Pin neg.	4-Pin neg.	4-Pin neg.	4-Pin neg.
Mounting (cap screw/adhesive)	type	3,25 hole	3,25 hole	3,25 hole	3,25 hole	3,25 hole
Weight	grams	6,5	6,5	6,5	6,5	6,5

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

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### Mounting

Reliable and accurate measurements require that the mounting surface be clean and flat. The sensor can be attached to the test structure with the supplied screws. The Operating Instruction Manual for the 8305B... provides detailed information regarding mounting surface preparation.

### Accessories Included

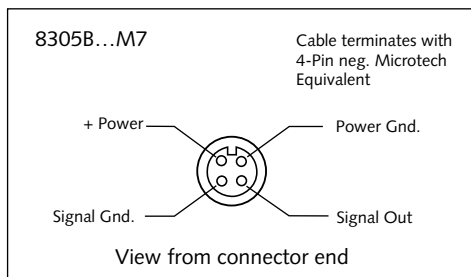
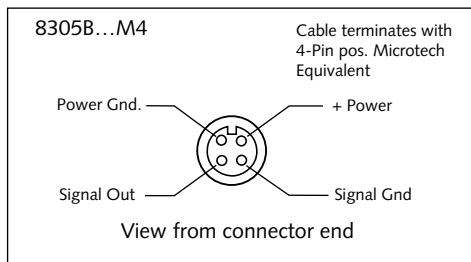
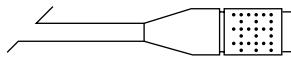
	Type
• (2) M2,5 x 10mm Socket HD Cap Screw	431-0475-001
• (2) 4-40 x 3/8" Socket HD Cap Screw	431-0475-002
• (4) Washer, 2,7mm I.D., Thk. Fiber	434-0318-001
• (1) Mounting Wax	8432

### Pigtail Interface Connections

red	power (+7...+32 VDC)	power (+7...+32 VDC)
white	(+) signal output	(+) signal output
black	power/ signal ground	power/ signal ground
orange	not used	(-) signal output
blue	not used	not used
green	not used	not used
shield	connected to case	connected to case

### Optional Accessories

	Type
• Triaxial mounting cube	8516
• K-Beam power supply	5210
• Extension cable, 4 pin neg. to 4 pin pos. Microtech equivalent connectors;specify length in meters	1578Asp
• Extension cable, 4 pin neg. to 4 pin neg. Microtech equivalent connectors; (cross connects pins) 1572 output/power supply interface ( use with 8305B...M4)	1592Asp



### Ordering Key

Range	
±2g	2
±10g	10
±25g	25
±50g	50
±100g	100

### Output

single ended, pigtail terminated	-
differential, pigtail terminated	M2
single ended, 4-pin pos. terminated	M4
single ended, 4-pin neg. terminated	M7

### Cable Length (meters)

standard (0,5)	-
user specified	sp

