

Type 8305A2, M2, M4, M7 ... 8305A25, M2, M4, M7

## 8305A K-BEAM® CAPACITIVE ACCELEROMETER SERIES

The 8305A K-Beam accelerometer series utilizes a three layer silicon micro-machined variable capacitance sensing element designed for measurements of low level acceleration in a steady state or low frequency environment. 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. They are insensitive to thermal transients and transverse acceleration.

The 8305A(X) 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 8305A(X)M4 and 8305A(X)M7 versions add a 4-pin (pos. and neg. respectively) connector to the cable end of the standard 8305A. The 8305A(X)M2 versions, operate from a single polarity supply and provides a differential output. When connected to a differential amplifier, the offset at 0 g is nominally 0 volts.

*Continued*

- Small, lightweight variable capacitance sensing element
- Frequency response 0 ... 250Hz
- Operates from a 9 volt battery
- 8303 replacement with less than 1mA supply current
- Conforming to CE



Technical Data	Units	8305A2, M(X)	8305A10, M(X)	8305A25, M(X)
<b>Acceleration Range</b>	g	±2	±10	±25
<b>Sensitivity</b> ±5%.	mV/g	500	100	40
<b>M2</b> version only	mV/g	1000	200	80
<b>Zero g Output</b> ±5%	V	2.5	2.5	2.5
<b>M2</b> version only, ±0.25V	V	0	0	0
<b>Resolution (Threshold)</b> typ.	µg	280	1410	3535
<b>Noise Density</b> typ. (0 ... 100Hz)	µg <sub>rms</sub> /√Hz	20	100	250
<b>Noise</b> (0 ... 100Hz) typ.	µg <sub>rms</sub>	200	1000	2500
<b>Resonant Frequency</b> nom.	kHz	1.4	2.7	5.1
<b>Phase Shift</b> @ 10 Hz max.	degree	2	2	2
100 Hz max.	degree	20	20	20
<b>Frequency Response</b> ±5% (100 Hz Ref.)	Hz	≥250	≥180	≥100
<b>Amplitude Non-linearity</b> typ. (max.)	%FS	0.4 (0.8)	0.4 (0.9)	0.6 (1.5)
<b>Sensitive Axis Misalignment</b> typ. (max.)	mrاد	<10 (≤30)	<10 (≤30)	<10 (≤30)
<b>Transverse Sensitivity</b> typ. (max.)	%	1 (3)	1 (3)	1 (3)
<b>Environmental:</b>				
<b>Random Vibration</b> 20 ... 2000 Hz	g <sub>rms</sub>	20	20	20
<b>Shock</b> 0.5 ms, half sine	g <sub>pk</sub>	6000	6000	6000
<b>Temperature Coefficient of: Sensitivity</b> typ. (max).	%/°F	0.01 (0.018)	0.01 (0.018)	0.01 (0.018)
	%/°C	0.02 (0.032)	0.02 (0.032)	0.02 (0.032)
<b>Bias</b> typ. (max).	mg/°F	0.11 (0.56)	0.56 (2.8)	1.5 (6.9)
	mg/°C	0.2 (1.0)	1.0 (5.0)	2.7 (12.5)
<b>Temperature Range: Operating</b>	°F (°C)		-40 ... 185 (-40 ... 85)	
<b>Storage</b>	°F (°C)		-65 ... 255 (-55 ... 125)	
<b>Integral Cable Length</b>	m		0.5	
<b>Capacitive Load</b> max.	pF		5000	
<b>Operating Load Resistance</b> min.	kΩ		40	
<b>Supply Voltage</b>	VDC		7 ... 16	
<b>Current</b> typ.	mA		0.7	
<b>Output Impedance</b>	Ω		40	

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

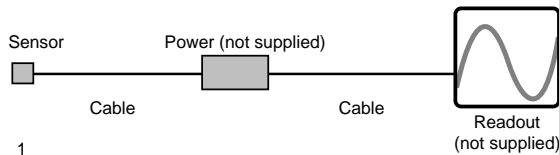
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Technical Data	Units	8305 Series
<b>Construction:</b>		
<b>Sensing Element</b>	type	capacitive
<b>Housing/Base</b>	material	Al./ hard anodize
<b>Sealing - Housing/cable</b>	type	Epoxy
<b>Connector</b>	type	pigtail, or 4-pin
<b>Cable</b>	type	shielded
<b>Weight</b>	grams	6.5
<b>Ground Isolation min.</b>	MΩ	10
<b>Mounting</b>	type	cap screw

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. The 8305A series accelerometers are housed in a sturdy, environmentally protected, anodized aluminum case with mounting flanges.

**Ordering Information**



- Specify: (X) = specify accelerometer range
- 1 - 8305A(X) accelerometer; single ended output; cable length 0.5m; pigtail termination.
  - 8305A(X)sp accelerometer; single ended output; cable length user specified, in meters; pigtail termination.
  - 8305A(X)M2 accelerometer, differential output; cable length 0.5m; pigtail termination.
  - 8305A(X)M2sp accelerometer, differential output; cable length user specified, in meters; pigtail termination.
  - 8305A(X)M4 accelerometer; single ended output; cable length 0.5m; 4-pin pos. Microtech connector termination.
  - 8305A(X)M4sp accelerometer; single ended output; cable length user specified, in meters; 4-pin pos. Microtech connector termination.
  - 8305A(X)M7 accelerometer; single ended output; cable length 0.5m; 4-pin neg. Microtech connector termination; connects directly to 5210 K-BEAM power supply.
  - 8305A(X)M7sp accelerometer; single ended output; cable length user specified, in meters; 4-pin neg. Microtech connector termination; connects directly to 5210 K-BEAM power supply.

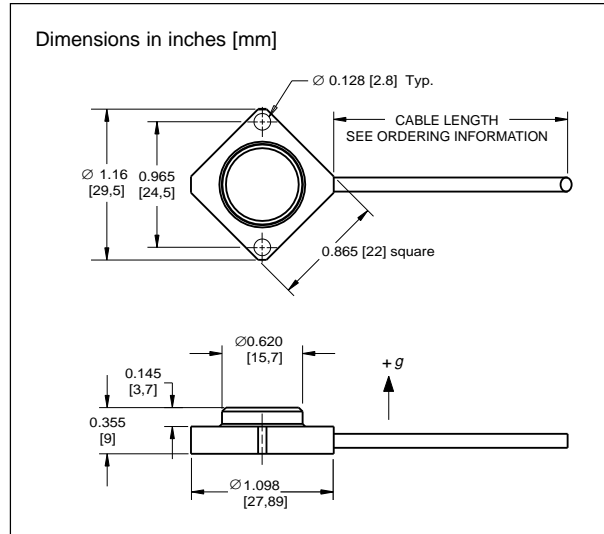
**Accessories**

**Supplied:**

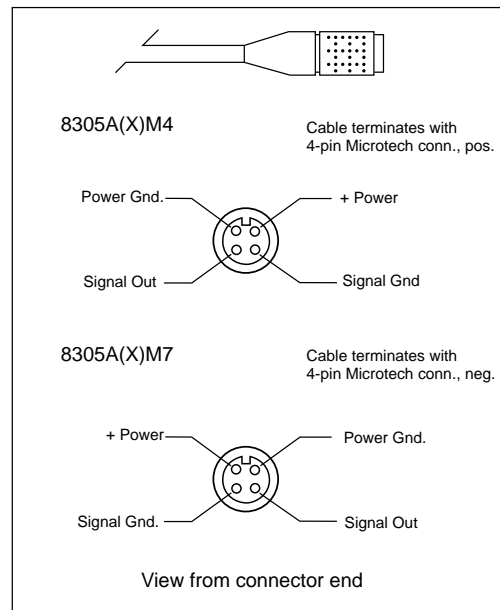
- 431-0475-001 (2) M2.5 x 10mm Socket HD Cap Screw
- 431-0475-002 (2) 4-40 x 3/8" Socket HD Cap Screw
- 434-0318-001 (4) Washer, 2.7mm I.D., Thk. Fiber
- 8432 (1) Mounting Wax

**Optional:**

- 8516 triaxial mounting cube



Pigtail Interface Connections		
Wire Color	Signal 8305A(X)	Signal 8305A(X)M2
red	power (+7...+16 VDC)	power (+7...+16 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	



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