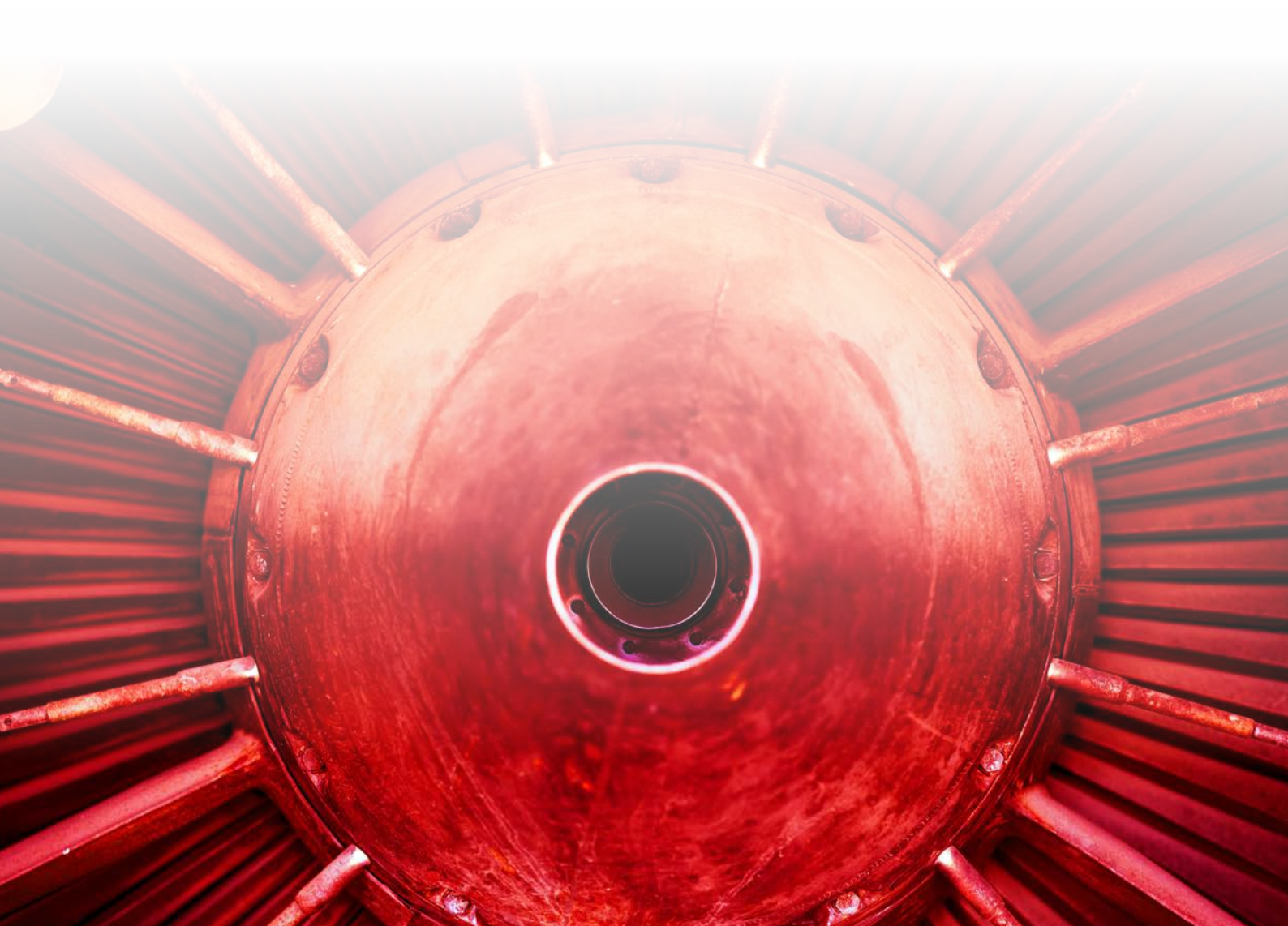


# Taking the Heat

Sensors for high temperature dynamic measurements

## Applications

- › Gas turbine vibration measurements
- › HALT/HASS testing
- › Automotive engine testing



When selecting sensing instruments for measuring dynamic events in high temperature (>550°F, 288°C) applications, it involves much more than just matching the temperature rating of the accelerometer or pressure transducer to the test environment. At very high temperatures, every component has to work together in a synergistic fashion. The cable that transmits the signals has to be able to withstand the environment and without adding triboelectric noise. The charge converter that receives and conditions the signal should match the output impedance of the sensor over its entire temperature range.

As a leading provider of pressure and vibration sensors for the most demanding aerospace, nuclear, turbine and industrial control measurement applications, Endevco advanced sensors are proven to withstand the challenges of high temperature environments.

- ▶ Able to withstand high temperatures (+550°F, +288°C)
- ▶ Long term, stable performance
- ▶ Small size & lightweight

## Endevco vibration sensors

Model number	2220E	2230E	2230EM1	6222S	2271A/2271AM20	2272
<b>Description</b>	Thru-hole mount 360° cable orientation Lightweight	Triaxial Adhesive mount	Triaxial Flange mount	ARINC mount Differential output	High sensitivity side or top exit connector	Wide frequency response
<b>Sensitivity</b> pC/g, typical	3.0	3	3	20 / 50 / 100	11.5	13
<b>Sinusoidal limit</b> g	1,000	1,000	1,000	2,000 / 1,000 / 500	1,000	1,000
<b>Shock limit</b> g	5,000	2,000	2,000	4,000 / 2,000 / 1,000	10,000	2,000
<b>Frequency response</b> ±1 dB Hz	1 to 12,000	1–10,000	1–10,000	1–12,000 / 1–9,000 / 1–9,000	1 to 8,000	1–9,000
<b>Temperature range</b> °C (°F)	-55 to +260 [-67 to +500]	-55 to +260 [-67 to +500]	-55 to +260 [-67 to +500]	-54 to +260 [-65 to +500]	-269 to +260 [-452 to +500]	-269 to +269 [-452 to +500]
<b>Signal/ground isolation</b>	Yes	No	No	Yes	Yes	No
<b>Hermetic seal</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Weight</b> gram (without cable)	3.1	17	22.5	91	27	27
<b>Dimensions</b> mm (in)	Ø 9.53 x 5.8 [Ø 0.375 x 0.23]	17.15 x 11.68 x 15.24 [0.675 x 0.46 x 0.60]	17.15 x 11.68 x 15.24 [0.675 x 0.46 x 0.60]	41.4 x 30.2 x 20.3 [1.63 x 1.19 x 0.80]	15.9 hex x 19.8 [5/8 hex x 0.78]	15.9 hex x 19.8 [5/8 hex x 0.78]
<b>Mounting method</b>	Screw	Adhesive	Screw	Screw	Stud	Stud
<b>Cable included</b>	3053V-120	3053V-120 (3)	3053V-120 (3)	No	3090C-120	3090C-120

Model number	2221F	7240C	7201	7703A	7704A
<b>Description</b>	Thru-hole mount 360° cable orientation	Very high frequency	General purpose	General purpose Radiation tested	General purpose Radiation tested
<b>Sensitivity</b> pC/g, typical	10	3.0	10 / 50 / 100	50 / 100 / 200 / 300 / 1,000	50 / 100
<b>Sinusoidal limit</b> g	1,000	1,000	2,000	2,000 / 1,000 / 850 / 675 / 500	2,000 / 1,000
<b>Shock limit</b> g	3,000	5,000	20,000 / 10,000 / 5,000	10,000 / 5,000 / 2,000 / 1,600 / 1,000	10,000 / 5,000
<b>Frequency response</b> ±1 dB Hz	0.1–12,000	1–20,000	1–15,000 / 1–10,000 / 1–8,000	1–9,000 / 1–8,000 / 1–6,000 / 1–5,000 / 1–3,000	1–9,000 / 1–8,000
<b>Temperature range</b> °C (°F)	-55 to +260 [-67 to +500]	-55 to +260 [-67 to +500]	-73 to +260 [-100 to +500]	-55 to +288 [-67 to +550]	-55 to +288 [-67 to +550]
<b>Signal/ground isolation</b>	Yes	No	No	Yes	Yes
<b>Hermetic seal</b>	Yes	Yes	Yes	Yes	Yes
<b>Weight</b> gram (without cable)	11	4.8	18 / 20 / 25	25 / 29 / 62 / 70 / 120	25 / 29
<b>Dimensions</b> mm (in)	Ø 15.24 x 8.9 [Ø 0.60 x 0.35]	9.53 hex x 11.68 [3/8 hex x 0.46]	15.88 hex x 19.8 [5/8 hex x 0.78]	for -50 / -100: 16.0 hex x 19.8 [5/8 hex x 0.78] for -200 / -300 / -1000: 25.4 hex x 23.1 [1.0 hex x 0.91]	16.0 hex x 21.1 [5/8 hex x 0.83]
<b>Mounting method</b>	Screw	Stud	Stud	Stud	Stud
<b>Cable included</b>	3090C-120	3053V-120	3090C-120	3090C-120	3090C-120

## Cable assemblies

Model number	6917B	3090C	3053V
<b>Connector 1</b>	7/16-27 female plug (2 socket)	10-32 male plug	M3 male plug, hex end
<b>Connector 2</b>	Pigtail	10-32 male plug	10-32 male plug, hex end
<b>Cable type</b>	Twisted pair, shielded	Coaxial, shielded	Coaxial, shielded
<b>Capacitance pF/ft, max</b>	80	40	32
<b>Conductor size AWG</b>	Stranded, 20	Stranded, 30	Solid, 33
<b>Jacket material</b>	Wrapped Teflon®	Wrapped Teflon®	Extruded Teflon®, VersaFlex
<b>Overall diameter in, max</b>	0.21	0.08	0.054
<b>Bend radius in, min</b>	0.6	0.85	0.5
<b>Temperature range °C (°F)</b>	-54 to +260 (-65 to +500)	-269 to +260 (-452 to +500)	-254 to +260 (-432 to +500)
<b>Low noise treated</b>	Yes	Yes	Yes

## Supportive instrumentation

Model number	2771CM2	2771C
<b>Features</b>	Designed for use with extreme high temp sensors, 1200°F (650°C)	4 gain options Supports TEDS
<b>Input</b>	PE	PE
<b>Channels</b>	1	1
<b>Gain</b>	1 mV/pC	0.1 / 1 / 5 / 10 mV/pC
<b>Broadband noise rms</b>	10 µV	5 / 30 / 50 / 50 µV
<b>Lower cutoff freq Hz (-3 dB)</b>	2	0.4 / 0.4 / 2 / 2
<b>Upper cutoff freq Hz (-3 dB)</b>	30	8 / 30,000 / 50,000 / 50,000 (±5%)
<b>Power requirements VDC</b>	24-30	24-30
<b>Operating temperature °C (°F)</b>	-40 to +257 (-40 to +125)	-40 to +257 (-40 to 125)
<b>Weight grams</b>	57	57



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