

2.2. SELECTING AN ACCELEROMETER

Ideally we would like to have an accelerometer having high sensitivity, maximum frequency range, and minimum weight. Unfortunately the requirement for high sensitivity is in direct conflict with the requirement for low weight and max. frequency range, so that some compromise must always be found. Furthermore some accelerometers have been designed to overcome extreme environmental conditions and for special applications, and therefore some design compromise is inevitable.

To simplify selection of an accelerometer for a vibration measurement refer to Table 2.1 and check the following points:

- (1) The weight of the accelerometer should be at least 10 times less than the weight of the specimen on which it is mounted.
- (2) Estimate what frequency range will be required and check that this lies within the frequency range of the accelerometer.

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no.	grams	mV/g	pC/g	Hz	°C/°F	g/μstrain	g	g/°C	Temp.	Water cooling	Main Applications (Suitable preamplifier indicated by V.A. for voltage and C.A. for charge amplifier)
Accelerometer Weight	Type	Voltage sensitivity	Charge sensitivity	Useful frequency range	*Unigain®	*Unigain®	Max. Temperature	Max. Base strain sensitivity	Maximum shock	Temp. transient sensitivity	LLF 3 Hz
4339	16	10.0*	10	1-12,000	260/500	0.1	10,000	2	no	V.A.	General purposes
4343	16	10	10.0*	1-12,000	260/500	0.1	10,000	2	no	C.A.	Vibration Measurements
8301	21	10.0*	10	1-8,000	260/500	0.0005	10,000	1	yes	V.A.	Vibration Testing and Control
8302	21	10	10.0*	1-8,000	260/500	0.0005	10,000	1	yes	C.A.	Large installations with multichannel unified systems
4338	60	100	100.0*	1-3,600	260/500	0.00005	1,000	0.2	yes	C.A.	Measurements of Low Level, Low Frequency Vibrations
4344	2	3	3	1-21,000	260/500	0.05	14,000	10	no	C.A.	High Frequency (and high level) Vibration Measurements. Shock Measurements. Measurements on Light Weight Structures.
8303	3.5	3	3	1-14,000	260/500	0.002	10,000	10	no	C.A.	Flat temperature response High Temperature Environments
4345	27	5	5	1-9,000	400/752	0.04	3,000	4	no	C.A.	For Vibration Measurements in Three Mutually Perpendicular Directions
4340	35	20	20	1-7,000	260/500	0.2	500	2	yes	C.A.	
4332	30	60	60	1-8,000	260/500	0.06	3,000	0.6	no	C.A.	
4333	13	20	20	1-10,000	260/500	0.2	7,000	3	no	C.A.	Non-critical purposes General Vibration Measurements
4334	30	60	60	1-8,000	260/500	0.06	3,000	0.6	yes	C.A.	
4335	13	20	20	1-10,000	260/500	0.2	7,000	3	yes	C.A.	
8304	30	—	1.2	(0)-9,000	260/500	0.002	10,000	0.1	no	C.A.	Very low freq. long shock durations Low pyroelectric effect
8305	40	—	1.2	(0)-9,000	260/500	0.0001	1,000	0.1	no	C.A.	Back-to-back Calibration of Accelerometers
8306	600	10,000*	10,000*	0.3-1,000	85/185	0.0001	1	0.00004	no	C.A.	Ultra-low level, low freq. measurements, e.g. building vibrations
8307	0.4	1.2	0.4	1-25,000	200/400	0.005	10,000	3	no	C.A.	Measurement on ultra light Structures
8309	3	0.3	0.04	1-60,000	120/248	0.5	100,000	64	no	C.A.	High Level and short duration shock

Table 2.1.