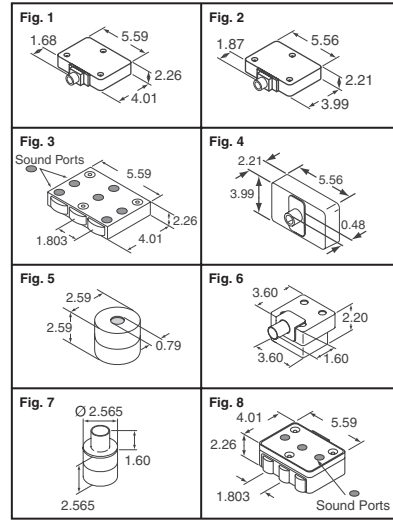


Dim. in mm

**FG Series:** • Integral FET amplifier • Wide, flat frequency response • Low noise performance • High electroacoustical sensitivity • 3-Wire configuration  
**EM Series:** • Integral FET amplifier • High electroacoustical sensitivity • Low vibration sensitivity • Low Noise • Small size **WP Series:** • Integral FET amplifier • High electroacoustical sensitivity • Low noise • Low vibration sensitivity • Flat response down to very low frequency • Survives submersion in water • 3-Wire configuration **EK Series:** • Integral FET amplifier • High electroacoustical sensitivity • Low vibration sensitivity • Low noise • 3-Wire configuration **EA Series:** • High resistance to mechanical shock • Rugged construction to withstand severe environmental conditions

Fig.	Sensitivity @ 1kHz		DC Supply Voltage	Max. Amplifier Current Drain (µA)	Max. "A" Weighted Noise (1kHz Equivalent SPL)	Output Imped. (Ω)	Digi-Key Part No.	Price Each			Knowles Acoustics Part No.
	(dB re 1V/Pa)	(dB re 1V/0.1 Pa)						1	10	100	
1	—	-53 ±2	1.3 - 10	50	26.0 dB	4400	423-1098-ND	28.75	23.43	20.13	EK-23024-P07
	—	-59 ±3	1.3 - 10	50	28.5 dB	3500	423-1124-ND	19.01	14.94	12.90	EA-21842-C36
	—	-53 ±2	1.3 - 10	50	26.0 dB	4400	423-1121-ND	19.80	15.56	13.44	EK-23024-C36
2	—	-53 ±2	1.3 - 10	50	26.0 dB	4400	423-1099-ND	20.57	16.77	14.40	EK-23133-C36
3	-33 ±3	-53 ±3	1.0 - 10	50	26.0 dB	4400	423-1008-ND	24.54	22.12	15.80	EK-3132
4	—	-53 ±2	1.3 - 10	50	26.0 dB	4400	423-1120-ND	19.80	15.56	13.44	EK-23027-C36
5	-33 ±3	—	0.9 - 1.6	50	28.0 dB	4400	423-1064-ND	40.10	36.13	25.81	FG-3629-P16
	-43 ±3	—	0.9 - 1.6	50	30.0 dB	4400	423-1067-ND	27.11	24.43	19.25	FG-3742-C05
	—	-53 ±3	1.3 - 1.6	50	30.0 dB	4400	423-1119-ND	26.60	21.68	18.62	FG-23329-C05
	-43 ±3	—	0.9 - 1.6	50	30.0 dB	4400	423-1068-ND	29.97	27.01	21.29	FG-3742-D36
	—	-53 ±3	1.3 - 1.6	50	28.0 dB	4400	423-1123-ND	26.60	21.68	18.62	FG-23629-C36
6	-36 ±3	—	0.9 - 1.0	50	31.0 dB	4400	423-1061-ND	23.64	21.30	16.90	EM-3046
	-36 ±3	—	0.9 - 1.0	50	31.0 dB	4400	423-1062-ND	31.18	28.09	22.15	EM-3046-P16
	—	-56 ±3	1.3 - 1.0	50	31.0 dB	4400	423-1122-ND	23.44	19.11	16.42	EM-23046-C36
7	-33 ±3	—	0.9 - 1.6	50	28.0 dB	4400	423-1065-ND	29.65	26.71	21.05	FG-3652-C36
	-33 ±3	—	0.9 - 1.6	50	28.0 dB	4400	423-1066-ND	40.10	36.13	25.81	FG-3652-P16
<b>Waterproof Microphones</b>											
8	-34 ±3	-54 ±3	1.0 - 10	50	28.0 dB	4400	423-1012-ND	33.39	30.09	21.49	WP-3502
	-34 ±3	-54 ±3	1.0 - 10	50	28.0 dB	4400	423-1054-ND	37.22	33.53	23.95	WP-3502-P16

◆ RoHS Compliant • Has 1 inch long leads † Has 79 inch long leads

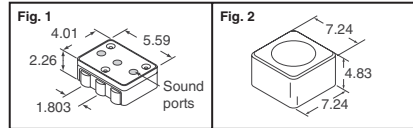


### Noise-Canceling Close Talking Microphones

Dim. in mm

**NR Series:** • Integral FET amplifier • Diaphragm responds to pressure differential giving high rejection of background noise • Small size • High electroacoustical sensitivity • Low vibration sensitivity  
**CF Series:** • Integral FET amplifier • Diaphragm responds to pressure differential giving high rejection of background noise • Withstands severe environmental conditions • Sound ports protected by woven mesh treated with water repellent • High resistance to mechanical shock  
**WP Series:** • Integral FET amplifier • Survives submersion in 1m water • Corrosion resistant • Withstands explosive decompression • High resistance to mechanical shock • Small size

Fig.	Sensitivity @ 1kHz		Microphone Configuration	DC Supply (V)	Max. Amplifier Current Drain (µA)	Nominal Output Imp. (Ω)	Digi-Key Part No.	Price Each			Knowles Acoustics Part No.
	(dB re 1V/Pa)	(dB re 1V/0.1 Pa)						1	10	100	
1	-32 ±3	-52 ±3	2-Wire	1.0 - 10	200	2500	423-1010-ND	16.90	15.23	11.04	NR-3160
2	-42 ±3	-62 ±3	3-Wire	1.0 - 10	50	3500	423-1014-ND	25.16	23.91	22.65	CF-2949
<b>Waterproof Microphone</b>											
1	-34 ±3	-54 ±3	2-Wire	1.0 - 10	300	2500	423-1011-ND	28.14	25.35	18.11	WP-3501



### Piezo Ceramic, Accelerometer, Magnetic Balanced Armature

Dim. in mm

**BL Series:** • High sensitivity • Wide frequency range and flat response • Integral FET amplifier • High resistance to mechanical shock • BL-1785 typically used for instrumentation applications • 3-Wire configuration  
**BU Series:** • Ceramic vibration transducer • High vibration sensitivity and small size • Wide frequency range • Integral FET preamplifier • 2 or 3-Wire configuration  
**BJ Series:** • Balanced armature technology • High efficiency, stability and reliability • Self-shielded against external magnetic fields • Small size • Omni-directional • 2-Wire configuration

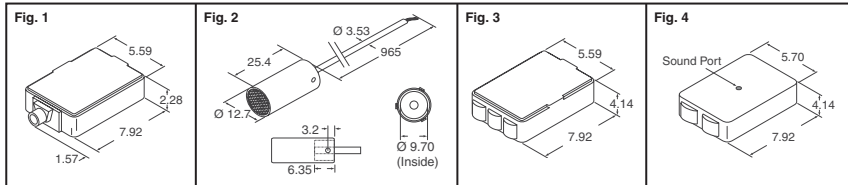


Fig.	Sensitivity @ 1kHz			DC Supply Voltage	Nominal DC Res. (Ω)	Max. Amplifier Current Drain (µA)	Max. "A" Weighted Noise (1kHz Equivalent SPL)	Output Imp. @ 1kHz (Ω)	Digi-Key Part No.	Price Each			Knowles Acoustics Part No.
	(dB re 1V/Pa)	(dB re 1V/0.1 Pa)	(dB re 1V/g)							1	10	100	
<b>Piezo Ceramic Microphones</b>													
1	-49 ±3	-69 ±3	—	3.0	—	160	34.0dB	4000	423-1003-ND	102.18	92.06	65.76	BL-21785
2	-49 ±3	-69 ±3	—	3.0	—	160	34.0dB	4000	423-1002-ND	126.99	114.07	90.57	BL-21994
3	—	-54.5 ±3	—	1.3	—	50	34.0dB	13000	423-1097-ND	46.78	38.69	34.14	BL21671-140
<b>Accelerometer (Vibration-Sensing Transducer)</b>													
3	—	—	-45.0 ±4.5	1.5 - 10	—	50	—	5200	423-1004-ND	52.71	47.49	33.92	BU-21771
<b>Magnetic Balanced Armature</b>													
4	-55.5 ±3	-75.5 ±3	—	—	900	—	—	3900	423-1001-ND	36.03	32.46	23.19	BJ-21590

◆ RoHS Compliant

### Waterproof Acoustical Transducers

Dim. in mm

**MR Series:** • Highly waterproof, no loss of performance after immersion in 15m water • Corrosion resistant • Withstands explosive decompression • Excellent environmental performance • High resistance to mechanical shock • Wire leads attached

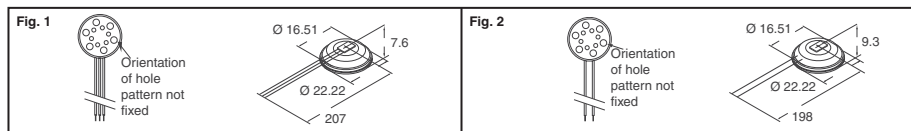


Fig.	Sensitivity @ 1kHz		DC Supply Voltage	Max. Amplifier Current Drain (µA)	DCR @ 20 dC ±10% (Ω)	Max. "A" Weighted Noise (1kHz Equivalent SPL)	Load Condition (Ω)	Output Imp. @ 1kHz (Ω)	Digi-Key Part No.	Price Each			Knowles Acoustics Part No.
	(dB re 1V/Pa)	(dB re 1V/0.1 Pa)								1	10	100	
<b>Electret Microphone</b>													
1	-41 ±4	-61 ±4	1.0 - 20	50	—	30	10K	3.5K	423-1016-ND	37.73	34.00	27.50	MR-8406
<b>Magnetic Microphone</b>													
2	-67.5 ±3	-87.5 ±3	—	—	75.5	—	300	300	423-1015-ND	23.12	20.84	19.96	MR-3151

(Continued)

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