Class+ Microphone Capsules Technical Specifications

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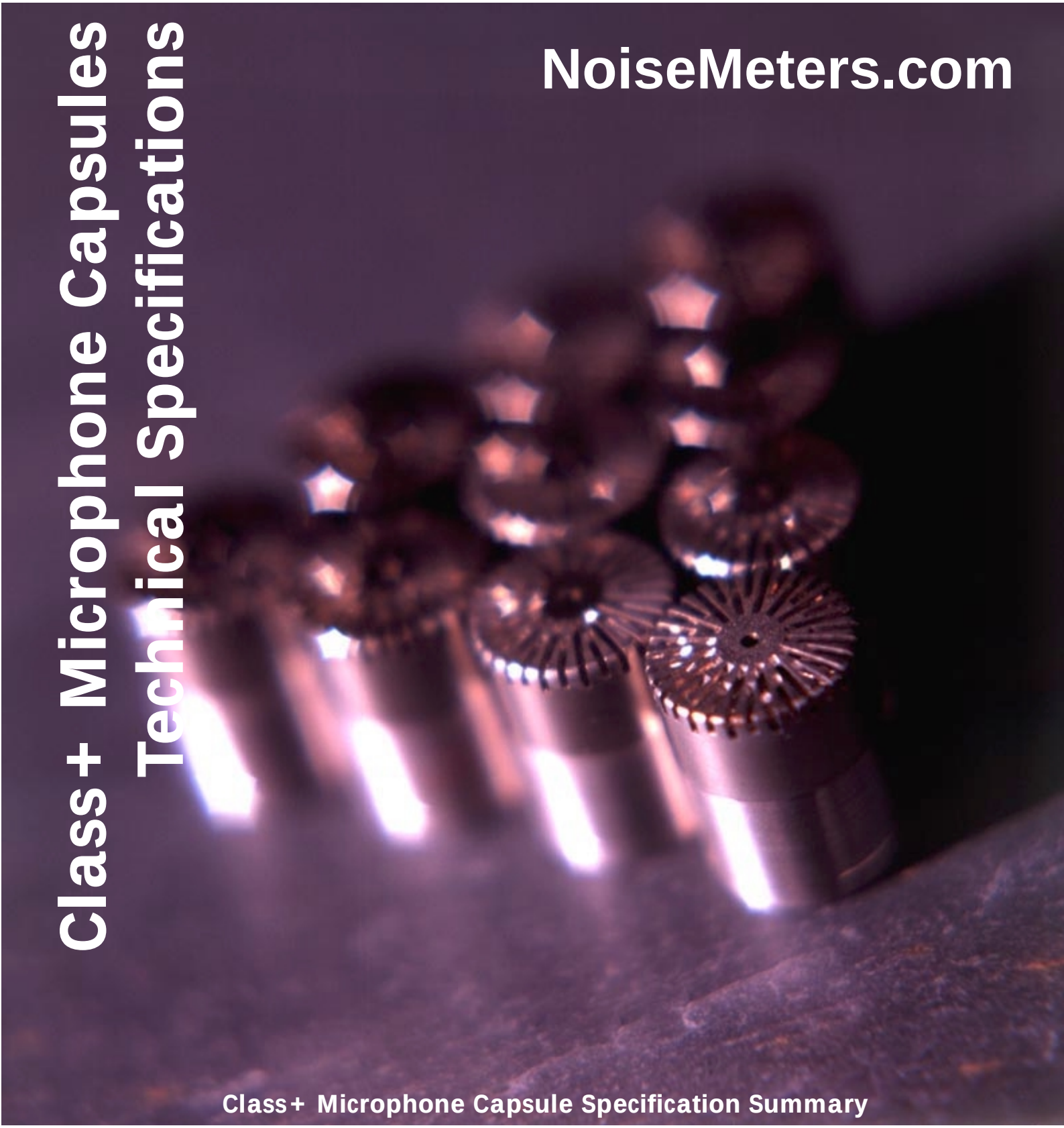


Class+ Microphone Capsule Specification Summary

Parameter	MK:224	MK:226	MK:216	MK:215
Noise Floor	<15 dB(A)	<18 dB(A)	<18 dB(A)	<20 dB(A)
LF 3dB Point	<8Hz	<8Hz	<10Hz	<12Hz
HF 3dB Point	>20kHz	>18kHz	>13.5kHz	>10kHz
Sensitivity	50mV/Pa	37mV/Pa	37mV/Pa	37mV/Pa
Accuracy	Class 1+	Class 1	Class 2+	Class 2

MK:224 Microphone Information & Technical Data

The MK:224 is the most accurate and stable of the Class+ Microphone capsules and is used on the Cirrus brand Type 1 Sound Level Meters, Noise Analysers and Noise Monitoring Systems.

The excellent long term stability and temperature stability allow the capsule to be used in long term outdoor monitoring applications, and has been in use in Cirrus Airport Noise Monitoring systems over periods of many years.

The overall specifications (nominal) for the MK:224 Capsule are listed below along with a typical free field and actuator frequency response. Please note that all information given below is for a typical MK:224 Capsule.

All values are typical standard testing conditions of 23°C, 101.3kPa and 50%RH unless otherwise specified.

General	
Capsule Type	Pre-polarised Electret Condenser
Sensitivity	50mV/Pa -26dB ±1.5 dB re 1V/Pa
Noise Floor	<15 dB(A)
Low Frequency 3dB Point	<8Hz
High Frequency 3dB Point	>20kHz
Maximum Level	146 dB for 3% Distortion
Equivalent capacity	18.5 pF @ 250Hz
Equivalent volume	42 mm^3
Environmental	
Temperature coefficient	-0.0069 dB/°C -10°C to +50°C
Stability	1dB in 1 x 10^5 hours @ 60°C
	1dB in 3 x 10^6 hours @ 20°C
Operating Temperature Range	-10°C to +50°C
Operating Humidity Range	0 to 100%RH
Magnetic Field	<30dB equivalent SPL for 80A/m @50Hz
Physical	
Diameter	12.6mm with standard grill
Height	17.2mm with standard grill
Mounting Thread	11.7mm 60 UNS
Grill Thread	12.7mm 60 UNS

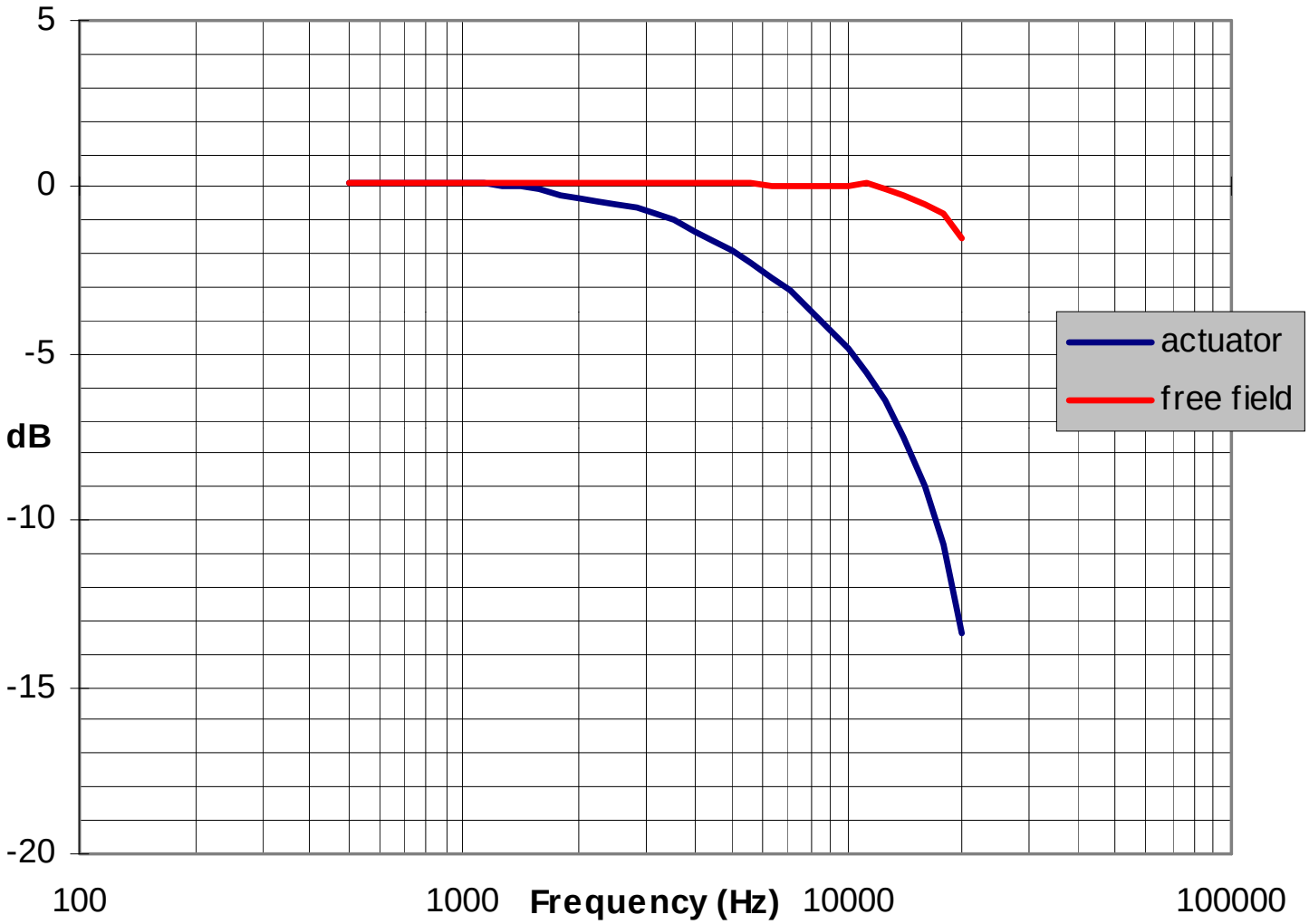


Figure 1
Typical MK:224 Free Field & Actuator Response

Free Field Correction

The Class+ microphone capsules are calibrated using an electrostatic actuation method. This results in a set of values that are adjusted to produce the free field frequency response of the capsule. The calibration chart that is supplied as standard with the MK:224 (and on request with the other Class+ capsules) shows the measured actuator frequency response and the corrected free field frequency response for the capsule.

The free field correction factor is added to the actuator response that is generated when the microphone is calibrated. The correction required is the same for all of the Class+ Microphone capsules, and is detailed below.

Frequency (Hz)	Correction (dB)	Frequency (Hz)	Correction (dB)
10	0	500	0
12.5	0	630	0
16	0	800	0
20	0	1000	0
25	0	1250	0
31.5	0	1600	0.2
40	0	2000	0.4
50	0	2500	0.6
63	0	3150	0.9
80	0	4000	1.3
100	0	5000	1.8
125	0	6300	2.7
160	0	8000	3.7
200	0	10000	4.8
250	0	12500	6.3
315	0	16000	8.5
400	0	20000	11.9

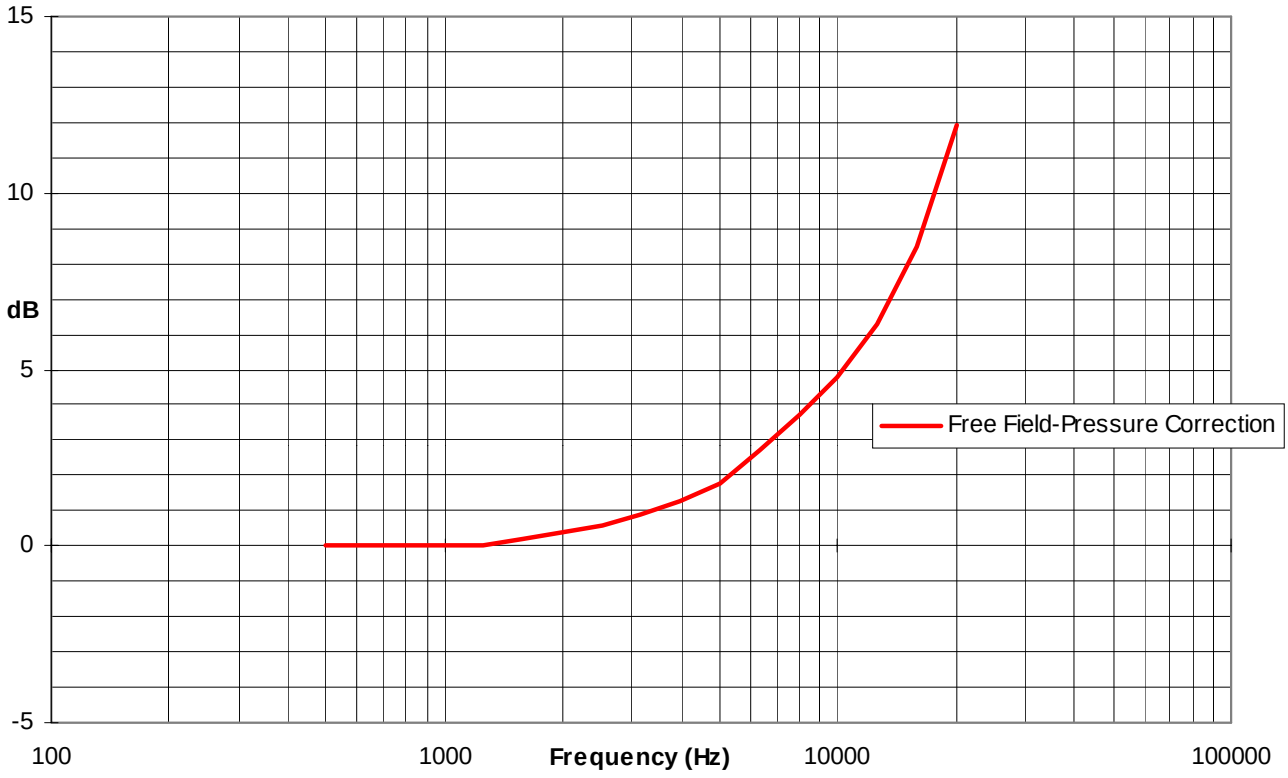


Figure 2 MK:224 Free Field Correction Values

MK:226, MK:216 & MK:215 Class+ Microphone Capsules

The Class+ Microphone Series includes three other microphone capsules, the MK:226 Class 1, MK:216 Class 2+ and the MK:215 Class 2. These capsules are produced using a similar design and technology as the leading MK:224 capsule, but have reduced specifications.

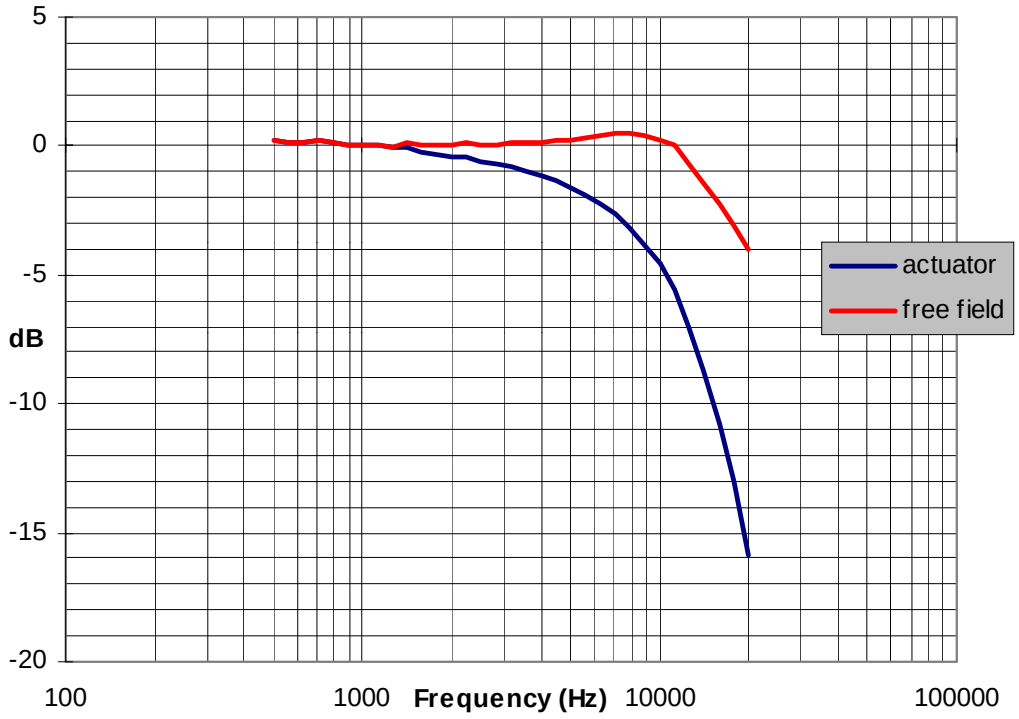
In many applications, the use of the most accurate microphone capsule is excessive, and a lower specification can be accepted. In these situations, the Class+ microphone capsules are ideal replacements for existing units, as their cost is usually significantly lower.

A summary of the specifications for these three microphone capsules is shown below, with the detailed information covered in the following pages.

Parameter	MK:224	MK:226	MK:216	MK:215
Noise Floor	<15 dB(A)	<18 dB(A)	<18 dB(A)	<20 dB(A)
LF 3dB Point	<8Hz	<8Hz	<10Hz	<12Hz
HF 3dB Point	>20kHz	>18kHz	>13.5kHz	>10kHz
Sensitivity	50mV/Pa -26 dB re 1V/Pa	37mV/Pa -28 dB re 1V/Pa	37mV/Pa -28 dB re 1V/Pa	37mV/Pa -28 dB re 1V/Pa
Accuracy	Class 1+	Class 1	Class 2+	Class 2

Please note all values are typical

MK:226 Class 1

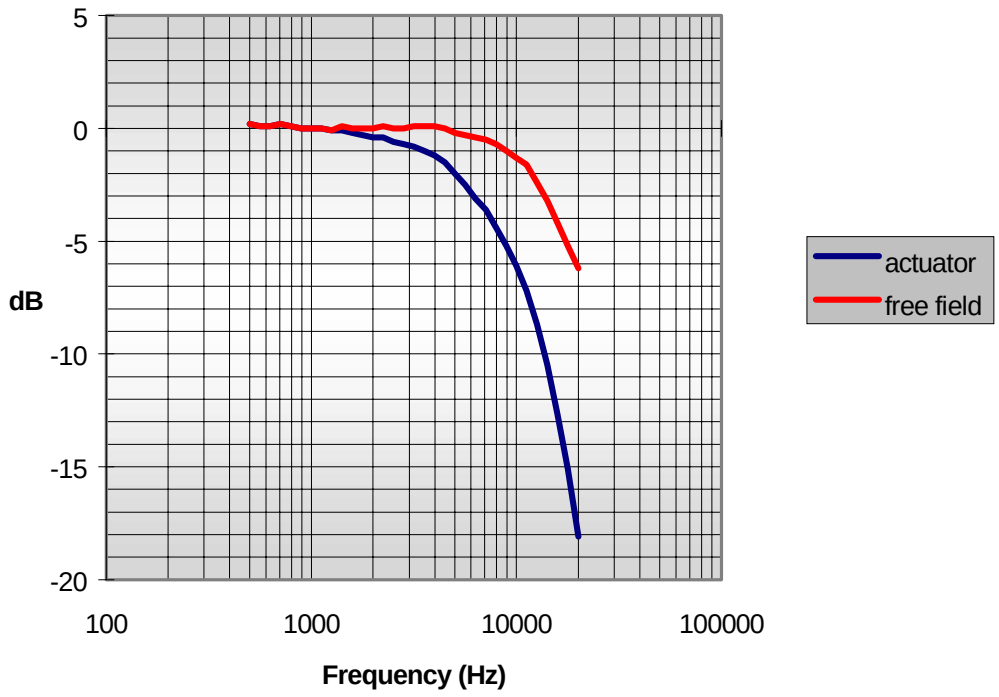


Parameter	Value (Typical)
Noise Floor	<18 dB(A)
LF 3dB Point	<8Hz
HF 3dB Point	>18kHz
Sensitivity	37mV/Pa -28dB re 1v/Pa
Accuracy	Class 1

Please note all values and graphs shown are for a typical microphone capsule

Microphone Type	Free Field
Capsule Type	Pre-polarised Electret Condenser
Physical Dimsensions	Ø12.6mm, 17.2mm High with standard grill
Mounting Thread	11.7mm, 60 UNS
Grill Thread	12.7mm, 60 UNS

MK:216 Class 2+

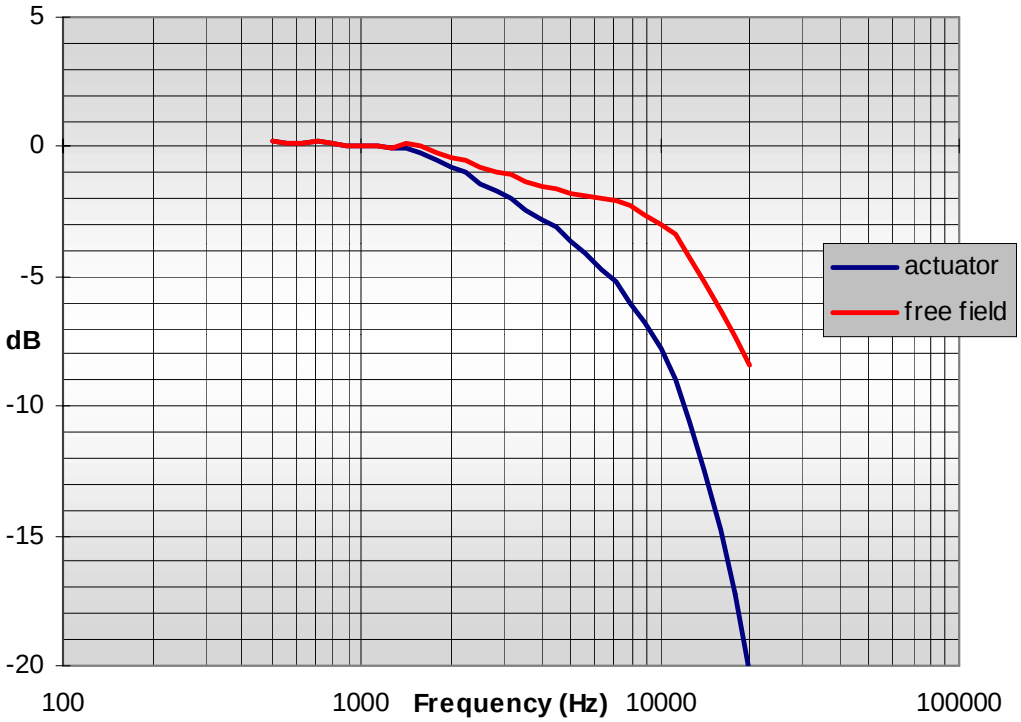


Parameter	Value (Typical)
Noise Floor	<18 dB(A)
LF 3dB Point	<10Hz
HF 3dB Point	>13.5kHz
Sensitivity	37mV/Pa -28dB re 1v/Pa
Accuracy	Class 2+

Please note all values and graphs shown are for a typical microphone capsule

Microphone Type	Free Field
Capsule Type	Pre-polarised Electret Condenser
Physical Dimsensions	Ø12.6mm, 17.2mm High with standard grill
Mounting Thread	11.7mm, 60 UNS
Grill Thread	12.7mm, 60 UNS

MK:215 Class 2



Parameter	Value (Typical)
Noise Floor	<20dB(A)
LF 3dB Point	<12Hz
HF 3dB Point	>10kHz
Sensitivity	37mV/Pa -28dB re 1v/Pa
Accuracy	Class 2

Please note all values and graphs shown are for a typical microphone capsule

Microphone Type	Free Field
Capsule Type	Pre-polarised Electret Condenser
Physical Dimsensions	Ø12.6mm, 17.2mm High with standard grill
Mounting Thread	11.7mm, 60 UNS
Grill Thread	12.7mm, 60 UNS

Free Field Correction

The Class+ microphone capsules are calibrated using an electrostatic actuation method. This results in a set of values that are adjusted to produce the free field frequency response of the capsule. The calibration chart that is supplied as standard with the MK:224 (and on request with the other Class+ capsules) shows the measured actuator frequency response and the corrected free field frequency response for the capsule.

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50	0	2500	0.6
63	0	3150	0.9
80	0	4000	1.3
100	0	5000	1.8
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200	0	10000	4.8
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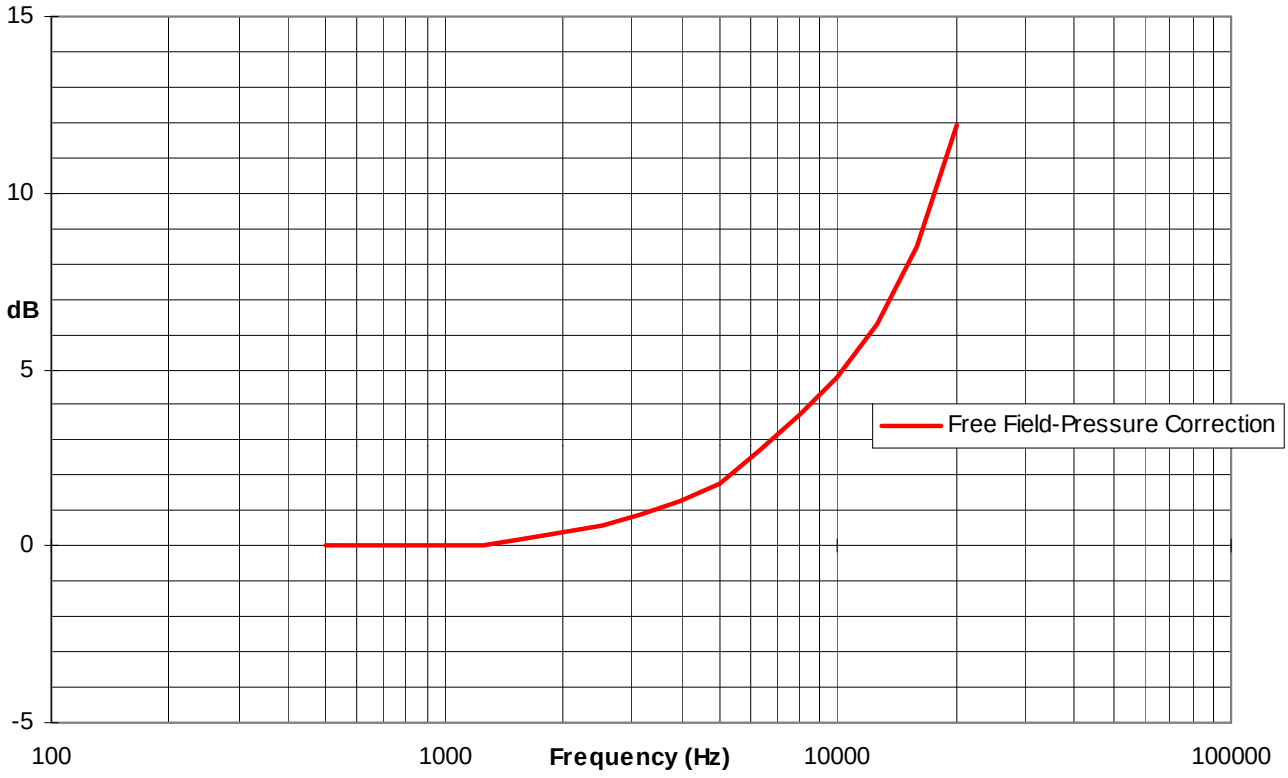
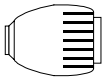
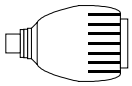
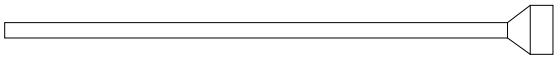
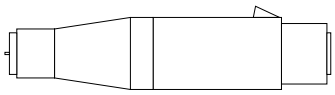
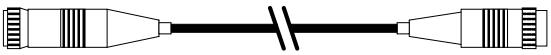
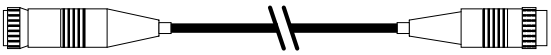
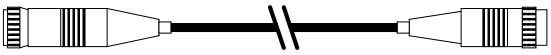


Figure 2 MK:224 Free Field Correction Values

Accessories for MK Series Microphone Capsules

A wide range of accessories are available to support the Class+ Microphone Capsules. These includes preamplifiers, power supplies and extension cables.

The major accessories are detailed below. For further information, please contact NoiseMeters.

Product	Description	
NK:67	Rainshield	
NK:66	Electrostatic Actuator & Rainshield	
NK:65	Nose Cone	
KP:66	Dummy Microphone Adaptor with BNC Connector. 18.7pF	
SV:65	Probe Set	
TA:202	Dehumidifier	
MV:181A	L3M Preamplfiier	
MV:200	Preamplifier	
ZL:202	2m Microphone Cable for MV:200 Preamplifier	
ZL:205	5m Microphone Cable for MV:200 Preamplifier	
ZL:210	10m Microphone Cable for MV:200 Preamplifier	
ZL:225	25m Microphone Cable for MV:200 Preamplifier	

Accessories for MK Series Microphone Capsules

Product	Description	
ZL:940	2m Microphone Cable for MV:181A Preamplifier	
ZL:941	5m Microphone Cable for MV:181A Preamplifier	
ZL:942	10m Microphone Cable for MV:181A Preamplifier	

The MV:200 and MV:181A Preamplifiers are usually powered by the ZE:900 Series power supplies. These small, lightweight units provide the required signals to the appropriate preamplifier, with the output signal connected via a standard BNC connector.

The MV:181A Preamplifier can be used with three different ZE:901 power supplies, which provide different gain settings. The MV:200 Preamplifier can be used with the ZE:902 unit.

Model	ZE:901	ZE:901/40F	ZE:901B	ZE:902
Input System	L3M (MV:181A)	L3M (MV:181A)	L3M (MV:181A)	MV:200
Gain	0dB	+40dB	0dB to +50dB 10dB Steps	Variable
Frequency Weighting	Linear	Linear	'A' or Linear	User Selectable
Power	2 x 9v PP3	2 x 9v PP3	2 x 9v PP3	Internal Battery External Power
Output	BNC	BNC	BNC	BNC

The ZE:900 Series power supplies listed above are single channel units only. Other multi-channel power supplies are available for special applications. Please contact NoiseMeters B.V. for further information.

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