

## MC21E MICROPHONE (FREE FIELD)

**MC21E** is a condenser type microphone, pre-polarized (0V) with standard ½ "diameter. The frequency response, optimized for free field, is flat from 3.2 Hz to 20 kHz.

### Applications

- Acoustic measurements with frontal source
- Class 1 precision sound pressure level measurements
- Optimized free field response
- Outdoor Measurements (with HDWME outdoor protection)



*Free field microphones are used to measure the existing sound pressure before the microphone is inserted into the acoustic field. The body of the microphone in fact, with its shape and its dimensions, influences the sound field, due to reflection and diffraction phenomena, mainly at high frequencies, where the wavelength of the sound is comparable to the dimensions of the microphone capsule. This phenomenon is physically manifested (disturbance of the acoustic field) with an increase of sound pressure mainly at high frequencies (above 1kHz). The microphones are then compensated to linearize the response in order to obtain a linear free field frequency response curve.*

TAB 1

Model	MC21E
<b>Technical Specifications</b>	
Nominal diameter	½"
Precision class	1
Acoustic Response	Free Field
Frequency range	3.15Hz ÷ 20KHz (±2dB)
Polarization (V)	0
Sensitivity (dB re. 1V/Pa)	-26
Nominal sensitivity (mV/Pa)	50
Temperature range	-40 ÷ +120 °C
Temperature coefficient	- 0.009 dB/°C
Pressure coefficient	-1.3x10 <sup>-5</sup> dB/Pa
Capacity (pF)	12
Max level (dB)	146
Intrinsic noise (A weighted)	15
Membrane material	Nickel
Dimensions (mm)	13.2 (diam) x 16.4

### MICROPHONE DRIFTS

Microphone drift coefficient	Value	Maximum Drift [dB]
Ct – temperature	-0.009dB/°C	± 0.3
Cp – static pressure	-0.013dB/kPa	± 0.2
Cu – relative humidity	-	± 0.3

Drift coefficients of acoustic sensitivity, due to temperature and static pressure, generating the sensitivity of microphone-preamplifier-instrument chain to drift (within the limits specified for class 1 according to IEC

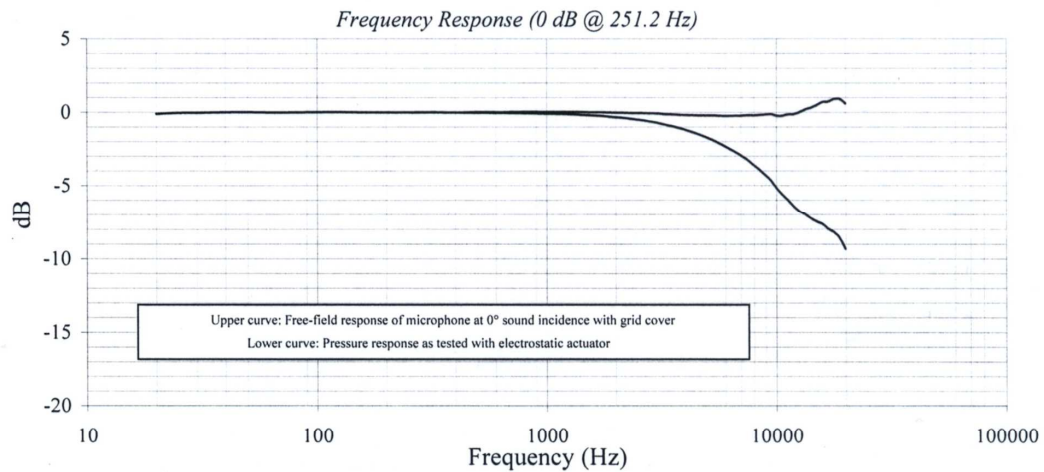
61672: 2002). Validity of coefficients: temperature range -10° C to + 50° C; static pressure range 65 kPa to 108 kPa; relative humidity range 25% to 90%

Typical (Free Field) frequency response of MC21E microphone

**Calibration Data**

Open Circuit Sensitivity @ 251.2 Hz: 47.69 mV/Pa      Polarization Voltage, External: 0 V  
 -26.43 dB re 1V/Pa      Capacitance: 12.1 pF

Temperature: 72 °F (22°C)      Ambient Pressure: 979 mbar      Relative Humidity: 982 %



Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)
20.0	-0.10	-0.10	1584.9	-0.21	0.00	6683.4	-2.75	-0.23	-	-	-
25.1	-0.03	-0.03	1678.8	-0.23	0.00	7079.5	-3.00	-0.22	-	-	-
31.6	-0.02	-0.02	1778.3	-0.26	-0.01	7498.9	-3.26	-0.19	-	-	-
39.8	0.00	0.00	1883.7	-0.29	-0.01	7943.3	-3.59	-0.20	-	-	-
50.1	0.01	0.01	1995.3	-0.33	-0.02	8414.0	-3.90	-0.17	-	-	-
63.1	-0.01	-0.01	2113.5	-0.36	-0.02	8912.5	-4.26	-0.15	-	-	-
79.4	0.00	0.00	2238.7	-0.40	-0.03	9440.6	-4.64	-0.12	-	-	-
100.0	0.01	0.01	2371.4	-0.45	-0.04	10000.0	-5.17	-0.22	-	-	-
125.9	0.02	0.02	2511.9	-0.50	-0.04	10592.5	-5.63	-0.23	-	-	-
158.5	0.00	0.00	2660.7	-0.56	-0.05	11220.2	-6.00	-0.14	-	-	-
199.5	0.00	0.00	2818.4	-0.62	-0.06	11885.0	-6.44	-0.12	-	-	-
251.2	0.00	0.00	2985.4	-0.69	-0.07	12589.3	-6.76	0.01	-	-	-
316.2	0.00	0.01	3162.3	-0.78	-0.10	13335.2	-6.99	0.20	-	-	-
398.1	-0.01	-0.01	3349.7	-0.87	-0.13	14125.4	-7.27	0.32	-	-	-
501.2	-0.02	0.02	3548.1	-0.96	-0.14	14962.4	-7.47	0.50	-	-	-
631.0	-0.03	0.01	3758.4	-1.06	-0.16	15848.9	-7.65	0.70	-	-	-
794.3	-0.05	0.04	3981.1	-1.18	-0.18	16788.0	-7.98	0.74	-	-	-
1000.0	-0.09	0.03	4217.0	-1.30	-0.19	17782.8	-8.20	0.91	-	-	-
1059.3	-0.10	0.03	4466.8	-1.43	-0.20	18836.5	-8.60	0.91	-	-	-
1122.0	-0.11	0.03	4731.5	-1.58	-0.21	19952.6	-9.32	0.61	-	-	-
1188.5	-0.12	0.03	5011.9	-1.74	-0.21	-	-	-	-	-	-
1258.9	-0.13	0.03	5308.8	-1.91	-0.21	-	-	-	-	-	-
1333.5	-0.15	0.03	5623.4	-2.11	-0.23	-	-	-	-	-	-
1412.5	-0.17	0.02	5956.6	-2.31	-0.24	-	-	-	-	-	-
1496.2	-0.19	0.01	6309.6	-2.53	-0.24	-	-	-	-	-	-