

# MICROTECH GEFELL

microphones & acoustic systems - founded 1928 by Georg Neumann



# M Cube

## Microphone System

for 3D recordings in  
time delay stereophony

- condenser microphones
- omni-directional
- measurement quality capsules
- nickel diaphragms
- transistor pre-amplifier
- phantom powering P48



## Mikrofon System M Cube

The M Cube is a 9-channel microphone system for time-delay based 3-dimensional recordings. The nine microphones are arranged in the shape of a cube with a length of approximately one metre each side. The positions of the microphones are adjustable – so the dimensions of the microphone arrangement can be adjusted to the dimensions of the room and the sound source. The mounting bars have distance markings, so that any setting can easily be repeated.

The M Cube is set up as a 5.0 array with another four microphones for height information. Five M 102 capacitor microphones are used for the lower plane and four M 221 capacitor microphones are used for the upper plane. All the microphones are omni-directional pressure microphones. Because of this, the frequency response is independent from the distance to the sound source and there is no proximity effect; sensitivity to wind noise is very low.

The use of certified WS1F- and WS2F- measurement microphone capsules, combined with a 48 V phantom powered pre-amplifier (that internally raises the capsule bias voltage to the required 200 V) reaches a constant magnitude and phase response according to the tight tolerances of DIN EN 61094-4 and with transmission properties that are long-term stable. Only the diameters of the capsules and the noise level of the M 102 and the M 221 are different, all other transmission properties and the construction of both microphones are identical.

Because of the high sensitivity of the microphones, a lower level of pre-amplification is necessary. This results in a lower noise level in the recording. The optional use of the acoustic equalisation balls KA 3 and KA 4 for the M 221 results in an additional acoustic amplification in the high frequencies. Due to the use of metal diaphragms, the microphones are very insensitive to changes of humidity in the air. All parts of the capsule – including the diaphragm – are made of nickel, so they are very insensitive to temperature changes.

A standard sound calibrator can be used to supply the microphones with an accurately defined sound pressure level. Thereby all the microphones can be adjusted to an equal amplification and also the following equipment can be optimally adjusted to the expected sound pressure level at the microphone position.



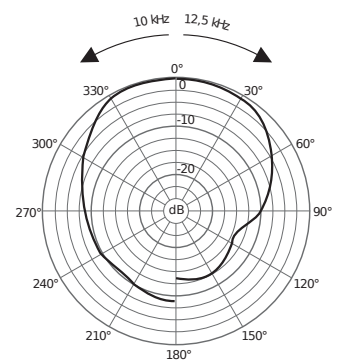
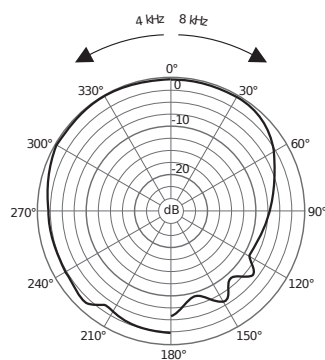
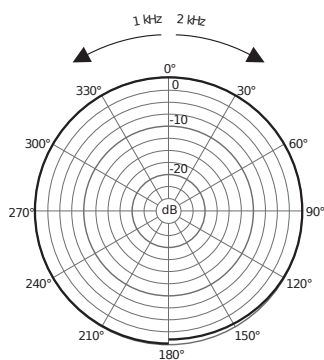
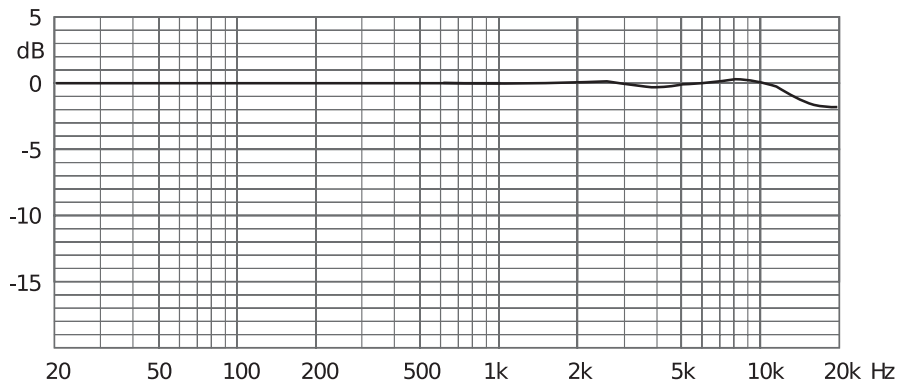


# Technical Specifications M 102



Polar pattern	omni	
Acoustic operating principle	Pressure transducer	
Frequency range	20 Hz to 20,000 Hz	
Sensitivity at 1 kHz	50 mV/Pa	
Output impedance	100 Ohm	
Noise level	CCIR 468-4	23 dB
	DIN EN 60268-4	11 dB-A
Signal-to-noise ratio	DIN EN 60268-4	83 dB-A
Max. SPL for 0.5% THD	136 dB	
Dynamic range	125 dB	
Power supply	48 V $\pm$ 4 V	
Current consumption	5.5 mA	
Output connector	XLR3M	
Weight	210 g	
Length	180 mm	
Capsule diameter	23.8 mm	
Pre-amplifier diameter	21.0 mm	

## Frequency response and polar pattern

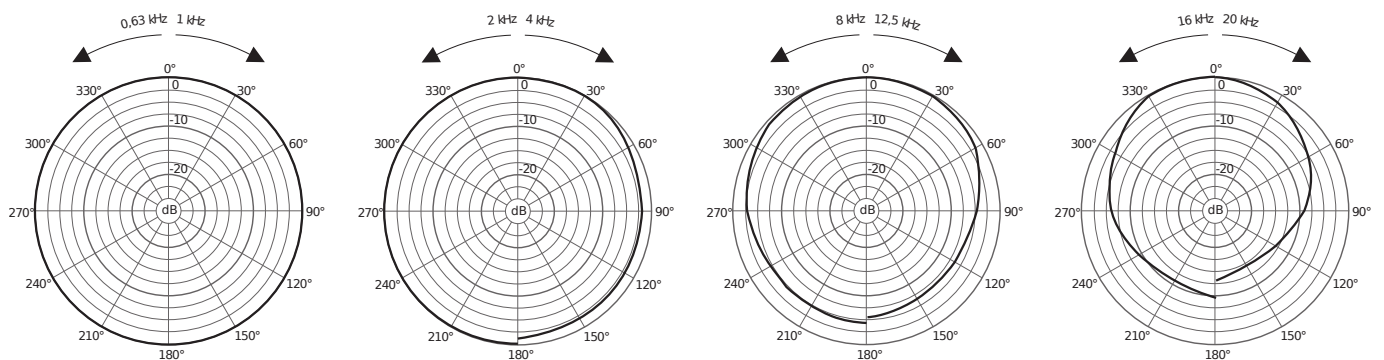
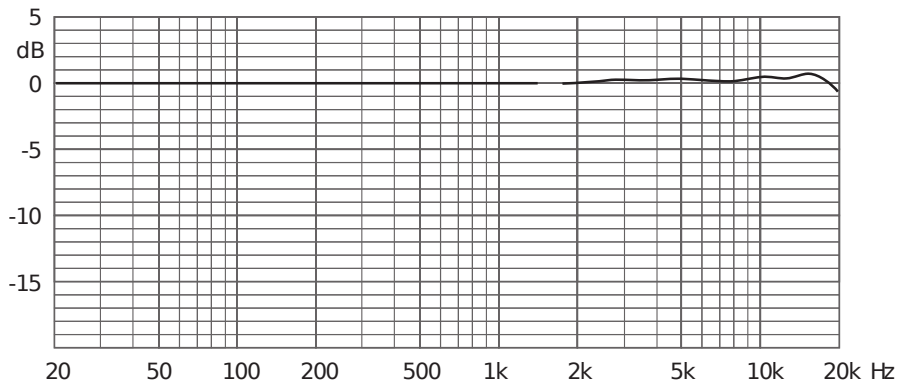


# Technical Specifications M 221



Polar pattern		omni
Acoustic operating principle		Pressure transducer
Frequency range		20 Hz to 20,000 Hz
Sensitivity at 1 kHz		50 mV/Pa
Output impedance		100 Ohm
Noise level	CCIR 468-4	28 dB
	DIN EN 60268-4	15 dB-A
Signal-to-noise ratio	DIN EN 60268-4	79 dB-A
Max. SPL for 0.5% Klirrfaktor		136 dB
Dynamic range		121 dB
Power supply		48 V $\pm$ 4 V
Current consumption		5.5 mA
Output connector		XLR3M
Weight		123 g
Length		170 mm
Capsule diameter		12.7 mm
Pre-amplifier diameter		21.0 mm

## Frequency response and polar pattern





# Product Overview

## Delivery

**Microphone system for 3D-Array 9.0, with 5 microphones M 102 and 4 microphones M 221, 9 microphone holders MH 93.1, 4 equalisation balls KA 3 and 4 equalisation balls KA 4 in aluminium case 450 mm x 350 mm x 160 mm**

dark bronze

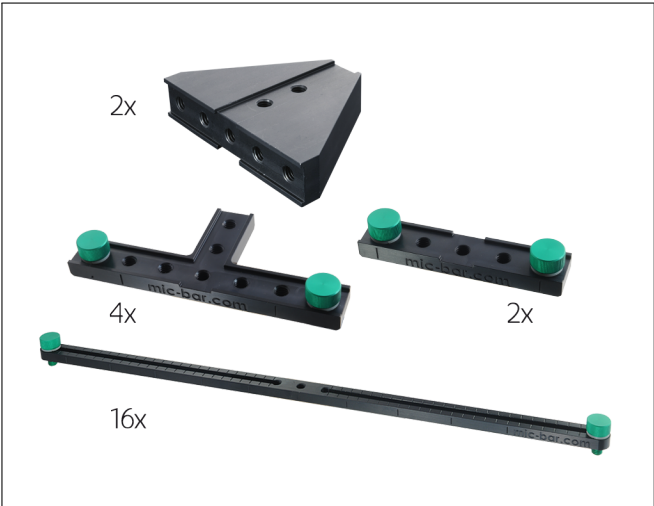
order number 2111199



**Microphone bar system for 3D-Array 9.0, with 16 microphone bars, 4 T-pieces, 2 connecting pieces, 2 connecting pieces for 3D-array in aluminium case 690 mm x 405 mm x 160 mm**

black anodized

order number 610202





## Accessories

Windscreen, anthracite	W 1	order number 302326
Windscreen, anthracite	W 2	order number 302329
Equalisation ball for M 221, 30 mm black	KA 3	order number 202364
Equalisation ball for M 221, 40 mm black	KA 4	order number 202365
Microphone holder, dark bronze	MH 93.1	order number 202303
3D-array connecting piece, black anodised		order number 600216
Microphone bar, 57 cm long, complete with 2 mounting bolts black anodised, mounting bolts are green anodised		order number 600177
Microphone bar T-piece, complete with 2 mounting bolts black anodised, mounting bolts are green anodised		order number 600207
Microphone bar connecting piece complete with 2 mounting bolts black anodised, mounting bolts are green anodised		order number 600180
Microphone bar suspension, complete with mounting bolt black anodised, mounting bolt is green anodised		order number 600181
Pair of 3/8" thread mounting bolts, green anodised		order number 600209
Eye bolt, 3/8" thread		order number 600217
Connection cable, 10 m	C 70.1	order number 202212
Connection cable, with integral RF filter, 10 m	C 70.1 HF	order number 202213
Calibrator	KAL 4010	order number 610201



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