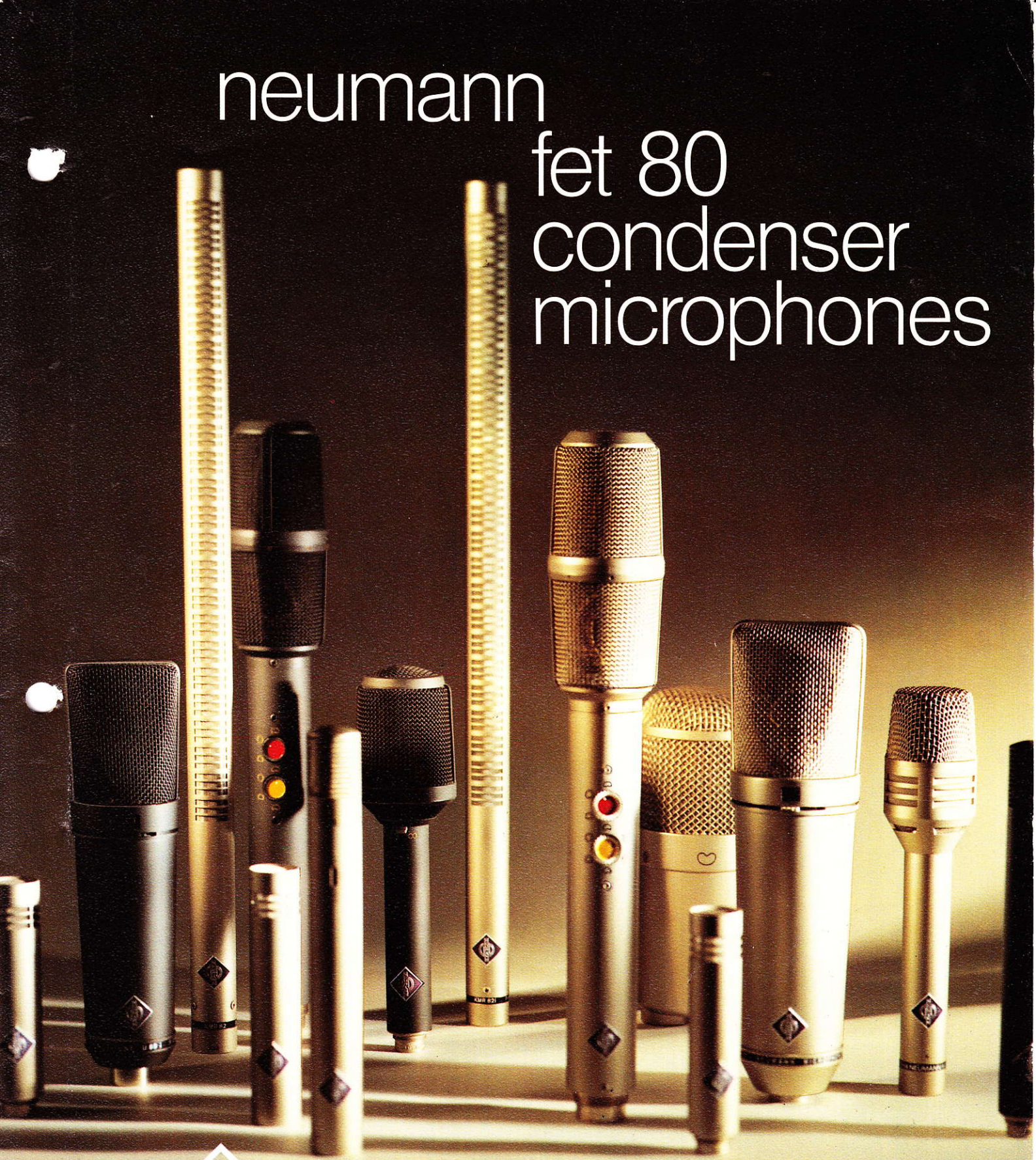
neumann

fet 80 condenser microphones



catalog 115

Neumann fet 80 Condenser Microphone

KM 83 i
KM 84 i
KM 85 i

KM 86 i

KM 88 i

KMS 84 i

KM 83 i, KM 84 i, KM 85 i
These miniature condenser microphones all have the same electronics, and are dimensionally identical but utilize three different interchangeable screw-on capsules. The KM 83 i is an omni-directional unit, while the KM 84 i and KM 85 i are both cardioids; the KM 85 i incorporates a low frequency roll-off which reaches about 12 dB at 50 Hz. The KM 85 i is therefore much less sensitive to low frequency interference which may be encountered outdoors or in public address applications. The "linear admittance" characteristic of the KM 84 i and KM 85 i units provides for unaltered sound quality regardless of the direction from which the sound impinges on the microphone.

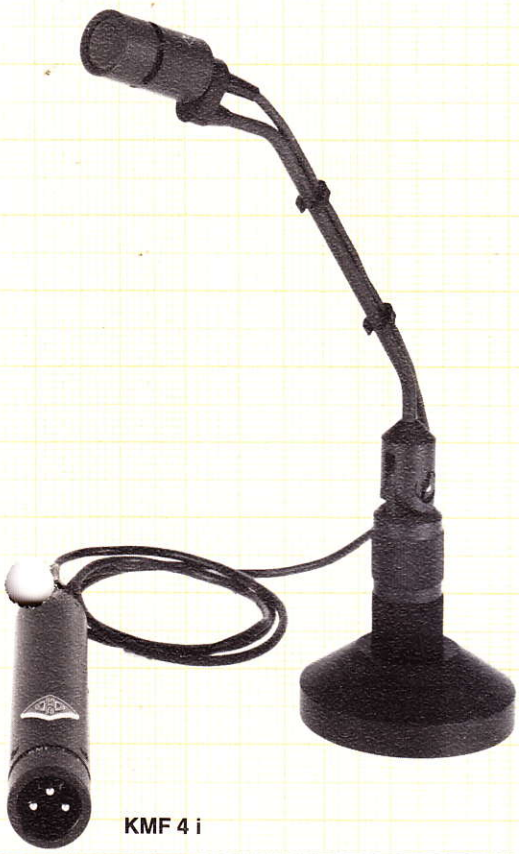
KM 86 i
The three directional characteristics: cardioid, figure 8 and omni, are electrically selected by a switch located below the capsule head. The capsule membranes are evaporated gold on polyester film. Axis of maximum sensitivity is at right angles to the microphone body. The two condenser elements are identical to those used on the model KM 84 i but their arrangement in a larger screened head changes the KM 86 i pick-up quality significantly from that of the KM 84 i even in the cardioid pattern.

KM 88 i
The model KM 88 i three-pattern miniature microphone is the successor to the KM 56 tube model. In spite of its three-pattern switchability (cardioid, figure 8, omni) it is notably small in its outside dimensions. The capsule's dual membranes are made of nickel, the only such on any fet-80 microphone, and give the KM 88 i its characteristic brightness.

KMS 84 i
This is a newly developed cardioid fet-80 microphone especially designed to solve the difficult problems encountered in the pick-up of high level rock music. A multistage mechanical filter in front of the condenser capsule provides unprecedented protection against popping and other explosive sounds. This, together with the elastic suspension of the capsule, provides suppression of noise so commonly found in hand held applications with rock soloists. The low frequency sensitivity can be rolled off somewhat to compensate for proximity effect (bass rise) by means of a switch.

KMF 4 i
The KMF 4 i microphone consists of an amplifier unit and a miniature condenser microphone capsule with impedance converter connected by a cable. This capsule has a diameter of only 17 mm and may be located inconspicuously up to 5 m from its amplifier section. This creates new possibilities for the concealing of a studio quality condenser microphone for stage and television productions. By contrast to other microphones of this size, the capsule used here is a cardioid, so that the distance from the sound source may be greater than it would be for a pressure transducer.
This microphone may be combined with the small MF 2 table stand and SG 8 connecting piece into a very attractive table microphone. The microphone may also be suspended from its own cable either vertically or tilted, using the MNV 8 suspension, making it easy to hide it in theatrical scenery.

es for 48 V Phantom Powering



KMF 4 i

TLM 170 i

U 47 fet i

TLM 170 i
The TLM 170 i condenser microphone is the first transformerless microphone of the fet 80 series. The direct, balanced signal output was achieved through the use of a completely new kind of electronic circuit, while maintaining a high degree of interference freedom and low current consumption. It has been possible to reduce significantly the self-noise level of the microphone compared to similar types. Five directional characteristics may be selected: omni, wide cardioid, cardioid, hypercardioid and figure-8. A future option will provide remote controllability of the directional characteristic. Excessive output levels, caused by high sound pressure levels, may be reduced by a 10 dB attenuation slide switch, while another switch rolls off frequencies below 100 Hz to eliminate low frequency interference. This microphone may be operated from the usual 48 V Phantom Powering circuits but will perform identically when operated from a 24 V Phantom source as well, without the need for switchover. The TLM 170 i is equipped with a tiltable, elastically suspended mounting bracket, which isolates the microphone effectively against mechanical noise interference.

U 47 fet i
The U 47 fet i continues the tradition of the world famous Model U 47, built from 1947-1960, which rightfully is credited with revolutionizing the world's recording and broadcasting industries. Its exterior strongly resembles its predecessor, but its technical properties represent the state-of-the-art today. It is protected against wind and pop interference; its capsule is elastically mounted to isolate it against mechanical shock disturbances; it features both a 10 dB overload protection switch at the input of its internal electronics and a 6 dB switchable output pad to permit matching to highly sensitive microphone input circuits. A low-frequency roll-off of 12 dB at 50 Hz is provided by a third switch.
The result is a versatile unit which will take most microphone applications in stride. The dual membrane capsule is a pressure-gradient transducer with cardioid characteristic.

U 87 i
The solid state condenser microphone model U 87 i is the best known and most widely used of the fet-80 series. The dual membrane capsule uses evaporated gold on polyester film which has proven to be the most heat and aging resistant material. Three switches are provided beneath the capsule itself: for selecting the three directional characteristics, frequency response and sensitivity. Its high frequency response is practically linear even in its cardioid and figure-8 positions.

U 89 i
The 89 i microphone, similar in shape but smaller than the U 87 i, is a studio microphone with switchable directional patterns. Its grille houses a newly developed dual-membrane capsule with a particularly linear frequency response for all polar patterns. A rotary switch beneath the grille permits selection of one of 5 directional patterns: besides the three usual ones – omni, cardioid, figure-8 – the intermediate positions "wide-angle cardioid" and "hypercardioid" are also available. This makes the U 89 i highly adaptable to both large instruments

U 87 i

U 89 i

SM 69 fet

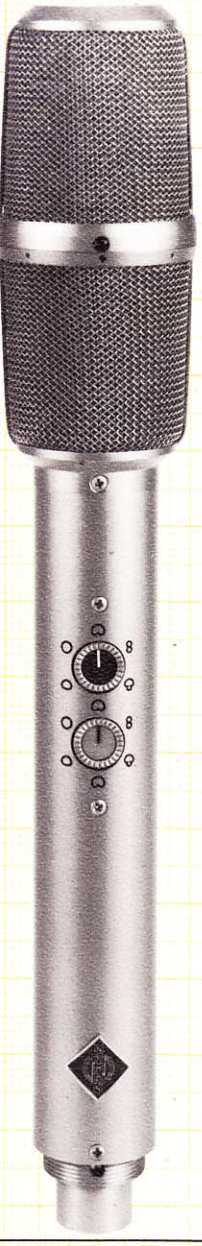
USM 69 i

and wide sound sources and makes it suitable for distant pick-ups as well. The amplifier allows sound pressure levels of up to 134 dB to be reproduced without distortion. When the negative feedback in the first amplifier stage is switched by means of the "−6 dB" rotary switch, the boundary SPL is raised to 140 dB, more than the peak sound pressure level to be found right in front of a trumpet. A high-pass filter inserted ahead of the output transformer provides a roll-off in sensitivity at either 80 Hz or 160 Hz.

SM 69 fet
The stereo condenser microphone, SM 69 fet, consists of two completely separate and independent microphone capsule systems mounted one above the other. The upper element may be rotated up to 270° with respect to the lower. This enables the user to apply the various intensity stereo recording techniques – such as M-S or X-Y – without the danger of arrival time (phase) differences between the systems. Both microphone systems are remote controllable. They may be switched independently of one another in 9 steps to cardioid, figure 8 and omni patterns and six characteristics in between. The microphone may also be used as two mono units; for example, when two microphones with differing directional patterns are needed in the same place. Axis of maximum sensitivity is at right angles to the microphone body.

USM 69 i
The USM 69 i is a stereo microphone featuring built-in directional pattern selectors. Its acoustical characteristics are identical to those of the SM 69 fet stereo condenser microphone since the entire capsule configuration has been adopted from it in unchanged form. With the SM 69 fet the directional patterns are selected by remote control, whereas with the USM 69 the directional patterns of the two systems are selected independently by using two rotary switches which are flush-mounted in the microphone body. As a consequence, the USM 69 i may be operated using two standard 3-pole phantom-powered microphone inputs. A built-in dc to dc converter generates the capsule bias required so that any of the polar patterns-omni, wide-angle cardioid, cardioid, hypercardioid and figure-8 – can be selected separately for either system. The in impedance converting special- give the USM 69 i 10 dB more hea (133 dB sound pressure level) tha SM 69 fet, thus providing the USI a dynamic range of more than 110 valent noise: approx. 20 dB). It ca fore pick up extremely loud soun at close proximity without difficul

KU 81 i
The dummy head is a replica of th head, into which microphones ha positioned where the "ears" are n located. Listening to the dummy h nal using high-quality headphone impression very similar to that wh listener would have if he were loc same place at which the dummy up. The result is an illusion of the presence at the place of the perfo When monitored through loudspe sound impression is almost ident one produced by a conventional microphone at the dummy head l A more detailed reproduction of t depth is obtained in addition. Thi speaker monitoring compatibility



KU 81 i

KMR 81 i

KMR 82 i

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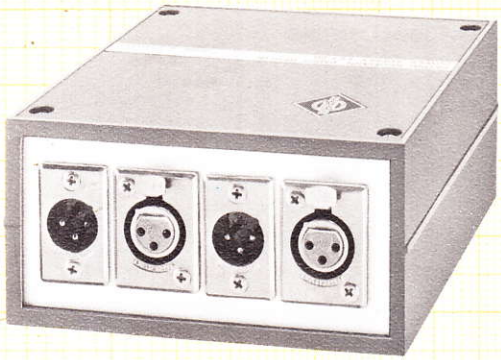
the most important differences between the KU 81 i Dummy Head and its predecessor, the KU 80 i.

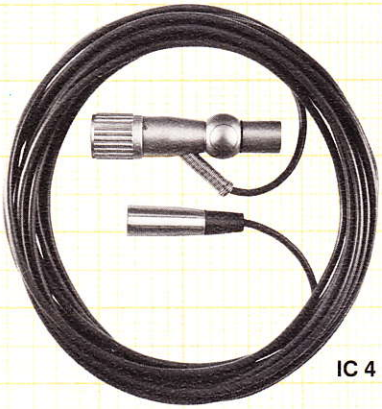
KMR 81 i
A condenser shot gun microphone is particularly recommended for use under recording conditions where microphones cannot be positioned within the desired distance of the sound source or, with video recording, when the microphone should not appear on the picture. The KMR 81 i is a condenser shot gun microphone featuring excellent directional characteristics for its relatively compact dimensions and low weight.
The KMR 81 i combines a high degree of sound rejection at its sides (similar to the hyper-cardioid: approx. 10 dB), with the high degree of front-to-back rejection of the super-cardioid, likewise 10 dB.
This principle also makes the microphone largely insensitive to wind and popping noises.

KMR 82 i
The NEUMANN KMR 82 i condenser shot gun microphone is characterized by its largely frequency-independent rejection of sound inciding at an angle to the microphone's axis, by its low self-noise and its good transient behaviour. Its small dimensions and lightweight construction with a favourably placed centre of gravity make for ease of handling. The directional characteristic of the microphone is lobe-shaped.

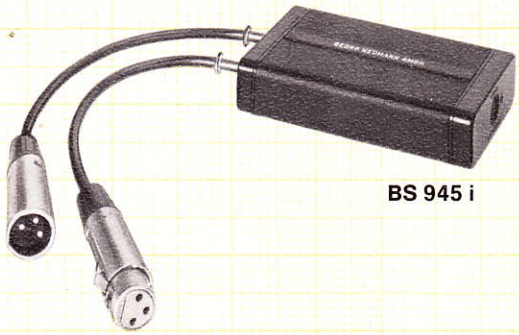
M 1:1,8



N 452 i

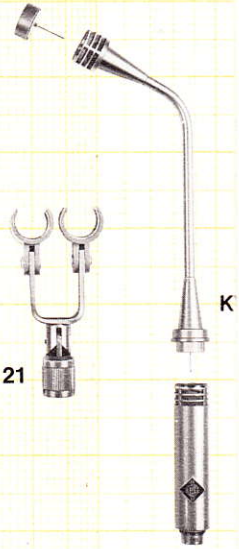


IC 4



BS 945 i

IC 3



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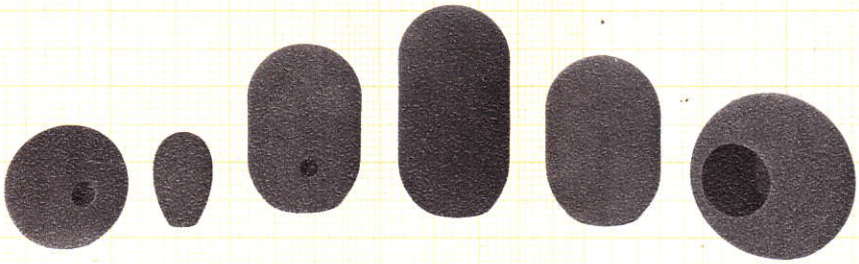
DS 21



WS 21 WNS 21 WS 87 WS 69 WS 86, WS 89 WS 47

MF 2

Phantom 48 VDC Power Supplies

N 452 i	portable AC supply for 2 mikes
N 448	Central AC supply for approx. 100 mikes
GW 2448 ka	Central 24 VDC supply for approx. 50 mikes
BS 945 i	Battery supply for 1 mike
NS 69 i	portable AC supply for 1 SM 69 fet
CU 48 i	Remote controller for 1 SM 69 fet

Microphone Connecting Cables

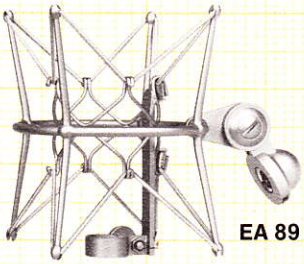
IC 3	Connecting cable, 10 m, for all microphones, except SM 69 fet and USM 69 i, with Switchcraft connectors
IC 4	Connecting cable with swivel mount, 10 m, for U 87 i and U 89 i
IC 5	Connecting cable, 10 m, for USM 69 i
IC 6	Connecting cable with rotary swivel mount, 10 m, for USM 69 i
SC 1	Connecting cable, 10 m, for SM 69 fet
SC 6	Connecting cable with rotary swivel mount, 10 m, for SM 69 fet

Wind and Pop Screens

WNS 21	Pop screen for KM 83 i, KM 84 i, KM 85 i available in grey, blue, red, green, yellow
WS 17	Wind screen for KMF 4 i
WS 21	Wind screen for KM 83 i, KM 84 i, KM 85 i, KM 88 i
WS 47	Wind screen for U 47 fet i
WS 69	Wind screen for SM 69 fet and USM 69 i
WS 81	Wind screen for KMR 81 i
WS 82	Wind screen for KMR 82 i
WS 86	Wind screen for KM 86 i
WS 87	Wind screen for U 87 i
WS 89	Wind screen for U 89 i

Z 13 a

SH 3 i



EA 89 i

M 184

M 210/1

SG 389

EA 21

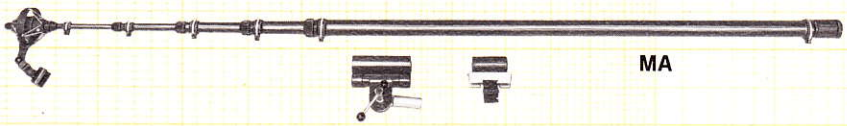
V 18

CF 3 i

SG 21

Z 24

MF 1



MA

Mikrophon-Etui
Jewellers Case

Stands, Booms and Mounts

MA	Telescoping "fishpole"-boom, max. 3.75 m long, fiberglas, weight 550 g, for all KM mikes
MF 1	Table stand, 115 mm dia.
MF 2	Table stand with shock absorber, 60 mm dia, for all KM mikes
M 210/1	Floor stand with boom attachment for all KM mikes
M 184	Studio boom
DS 21	Dual microphone mount for 2 KM mikes
SG 21	Swivel mount for KM mikes
SG 367	Swivel mount for U 87 i
SG 389	Swivel mount for U 89 i

Signalling lights

CF 3 i	Signalling light, 3 poles
CF 35 i	Signalling light, 5 poles
Z 24	Mounting clamp

Capsule Extension Tubes

For KM 83 i, KM 84 i, KM 85 i
Straight: KV 40
Bent: KV 18, KV 38, KV 58
20, 40 60 cm long

Microphone Suspensions

EA 21	Elastic Suspension for all KM and KMR 81 i
EA 30 a	Same as above for SM 69 fet and USM 69 i
EA 47	Same as above for U 47 fet i
EA 82	Same as above for KMR 82 i
EA 89 i	Same as above for U 89 i
Z 48	Same as above for U 87 i
MNV	Auditorium hanger for KM mikes

Goosenecks

Z 13 a	Gooseneck with ½" thread, 220 mm long
SH 3 i	Gooseneck with female and male connectors, 3 poles

Jewellers cases

Jewellers cases with insert and metal lock are available for all microphones.

Further accessories, not mentioned in this shortform catalog, are available on request. Our microphones and some accessories can also be delivered with dark matt finish and are then additionally marked "mt".

GOTHAM AUDIO CORPORATION

741 Washington St., New York, NY 10014
(212) 741-7411
West Coast Sales Office
(213) 841-1111

Specifications

Type	KM 83 i	KM 84 i KM 85 i	KMS 84 i	KM 86 i	KM 88 i	KMF 4 i	U 89 i	U 87 i	TLM 170 i	U 47 fet i	USM 69 i	SM 69 fet	KMR 81 i	KMR 82 i	KU 81 i
Directional patterns															
Acoustic operating principle	pressure transducer	pressure gradient transducer													pressure transducer
Frequency range Hz	40 – 20.000	40 – 20.000	40 – 16.000	40 – 20.000	40 – 16.000	40 – 20.000	40 – 18.000	40 – 16.000	40 – 18.000	40 – 16.000	40 – 16.000	40 – 16.000	40 – 18.000	40 – 20.000	40 – 16.000
Sensitivity re 1 Pa[1] mV/Pa	7	10 9	5	9.5	6.5	14	8	8	8	8	10	19	18	21	10
Source impedance Ω	200	200	150	200	200	150	150	200	150	150	150	200	150	150	150
Equivalent loudness level due to inherent noise DIN 45 405 (1967) dB	27	24 25	25	26	26	25	24	25	21	25	20	20	19	19	25
Equivalent loudness level due to inherent noise CCIR 468–1 (1976) dB	31	28 29	29	30	30	29	28	29	25	29	24	24	23	23	29
Equivalent loudness level due to inherent noise JEC 179 dB-A	20	17 18	18	19	19	18	17	18	14	18	13	13	12	12	16
S/N ratio (A weighted) re 1 Pa at 1 kHz dB	74	77 76	76	75	75	76	77	76	80	76	81	81	82	82	78
Max. SPL for less than 0.5% THD[2] without dB	123	123	138	123	124	130	134	122	140	137	133	123	128	128	130
Max. SPL for less than 0.5% THD[2] with pre attenuation dB	133	133		133	134	140	140	132	150	147			138		
Total dynamic range of the microphone amplifier[3] dB	113	116 115	120	114	115	122	123	114	126	129	120	110	126	116	114
Power supply + 48 ± 4 Vdc mA	0.4	0.4	0.5	0.4	0.45	0.9	0.8	0.4	2	0.5	2 x 0.7	0.8	0.7	0.7	2 x 0.7
Weight g	80	80	210	210	130	20/105	400	500	625	710	510	465	145	250	2700
Dimensions: diameter mm	21	21	21/40	21/47	21	17 x 38	46	56	60	63	30/48	30/48	21	21	180
Dimensions: length mm	110	110	177	185	170	21 x 132	185	200	152	160/219	292.5	260	226	395	280

[1] 1 Pa ≙ 94 dB SPL
[2] THD of the microphone amplifier when an input level equivalent to the capsule output at the specified SPL is applied
[3] Referred to IEC 179 weighted equivalent loudness level, with pre attenuation