# <u>Milab</u> Condenser microphone DC-96

# Fixed cardioid condenser mike



# Features:

The DC-96 is a cardioid condenser microphone for operation on 48 volt MIPOW<sup>™</sup> system. It features very low inherent noise with high signal output. The extremely smooth frequency response, both on-off axis, coupled with its' small size make the DC-96 an ideal all-around cardioid microphone where uncompromising audio quality is demanded.

# Description:

- Unique rectangular dual-membrane full condenser capsule.
- Dual FET pre-amplifier.
- Silicone rubber capsule suspension.
- Steel mesh protective grill.
- Precision machined solid case.
- 3-pin XLR male connector at the base.

# **Applications:**

For all studio and live performance where the highest quality sound is demanded. The high quality audio performance coupled with its

small physical size makes the DC-96 essential for all applications which require a cardioid pattern whether at close or distant pick-up. Two DC-96's placed one over the other, and oriented optimally, may be used in a XY-cardioid stereo pick-up system.



Directional pattern	Cardioid	Dynamic range	129 dB	
Operating principle	One dual membrane	S/N-ratio at 1 KHz A-weighted	77 dB/Pa	
	full condenser capsule	Output impedance (balanced)	200 ohms	
Directivity index	18–20 dB	Supply voltage	MIPOW <sup>™</sup> system	
Frequency response	20–20.000 Hz	Operating voltage	24 to 54 volt (nominal +48 volt)	
Sensitivity at 1 KHz (over 200 ohms re. 1 V.)	–42 dB/Pa	Current consumption	0.8 mA	
Output at 1 KHz	8.0 mV/Pa	Capsule suspension	Silicone rubber	
(over 200 ohms re. 1 V.)	0.0 110/1 0	Connection	XLR 3 pin	
Output at 1 KHz at max SPL	300 mV	Dimensions in millimeters	145 long 27 diam.	
(Over 200 ohms re. 1 V.)		Weight in grams	200	
Maximum SPL less than 1% dist.	146 dB	Finish	Satin Chrome	
Self noise A-weighted (re. 2x10-5 Pa)	17 dB			
Self noise A-weighted (re. 2x10– <sup>5</sup> Pa)	1/ dB	1		



A Windscreen B Stand adaptor C Shockmount

# Accessories:

Accessories and description	Туре	Included	Optional
Microphone cable	3003 C	۲	
Stand adaptor (5/8"x27 TPI)	1930/27	•	
Shockmount (5/8"x27 TPI)	1910/27	•	
Windscreen (grey)	V-96		
Windscreen Colored (red, yellow, blue, green)	VR-96, VY-96 VB-96, VG-96		
Mains power supply (110/220 VAC)	8320/S	•	
Battery power supply	7325 C		٠
Carrying case (mike only)	Case		٠
Carrying case (complete)	CC-63		۲
Cardboard box		•	



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# MilaBCondenser microphoneAll around omni/cardioid quality mike



# Features:

The DC-20 (omni-directional) and the DC-21 (cardioid) are full condenser microphones designed for operation on 48 volt MIPOW<sup>™</sup> system. They are small in physical size, light in weight and have wide frequency range with smooth on-off axis response. The DC-21 provides superior front to back rejection ratio for a cardioid microphone of such small size.

# Description:

- Circular single membrane full condenser capsule.
- Single FET pre-amplifier.
- Rugged construction.
- Precision machined solid case.
- 10 meter fixed cable terminating in 3-pin XLR male connector.



# **Applications:**

Recommended for podium/lecturn use in public address systems, and for close to medium distance chior/orchestral pick-up. See listing of accessories for many applications.



# Milab **Condenser microphone DC 63**

Variable pattern condenser microphone



# Features:

The DC-63 is a variable pattern condenser microphone for operation on MIPOW system. The pick-up pattern is selected by a combination of two ring switches and a potentiometer on the microphone body. This provides 44 distinct combinations from Omni, Cardioid, Bi-directional and in-between settings, and a selection of 12 dB pad in flat or high pass response.

# Description of the microphone:

- Unique rectangular dual membrane condenser capsule of full condenser type.
- Dual FET pre-amplifier.
- Two ring switches built around four reed switches.
- Capsule suspension of silicone rubber.
- 3-pin male XLR connector at the base.

# **Applications:**

The DC-63 features low noise, high output level and extremely smooth frequency response both on and off axis. These qualities combined with

great flexibility of operation the DC-63 make it ideal for professional studio recording and broadcasting applications requiring distant or close pickup of instrumental, vocal or choir, and wherever a wide-range, full natural sound is desired.

Directional pattern	Cardioid A	Omni-directional	Cardioid B	<b>Bi-directional</b>			
Potentiometer setting	0	1	1 or 5	5			
Operating principle	One dual membra	One dual membrane full condenser capsule					
Directivity index	18–20 dB	18–20 dB 18–20 dB					
Frequency response	20–20.000 Hz	20–20.000 Hz	20-20.000 Hz	20–20.000 Hz			
Sensitivity at 1 KHz with 12 dB pad (over 200 ohms re. 1 V.)	—42 dB/Pa —54 dB/Pa	—46 dB/Pa —58 dB/Pa	—46 dB/Pa —58 dB/Pa	—46dB/Pa —58 dB/Pa			
Output at 1 KHz with 12 dB pad (over 200 ohms re. 1 V.)	8.0 mV/Pa 2.0 mV/Pa	5.0 mV/Pa 1.3 mV/Pa	5.0 mV/Pa 1.3 mV/Pa	5.0 mV/Pa 1.3 mV/Pa			
Output at 1 KHz at max SPL (over 200 ohms re. 1 V.)	300 mV	300 mV	300 mV	300 mV			
Maximum SPL less than 1% dist. with 12 dB pad	146 dB 156 dB	150 dB 160 dB	150 dB 160 dB	150 dB 160 dB			
Self noise A-weighted (re. 2x10 <sup>-5</sup> Pa)	18 dB	20 dB	20 dB	20 dB			
Dynamic range with 12 dB pad	128 dB 138 dB	130 dB 140 dB	130 dB 140 dB	130 dB 140 dB			
S/N-ratio at 1 KHz A-weighted	76 dB/Pa	74 dB/Pa	74 dB/Pa	74 dB/Pa			
Output impedance (balanced)	200 ohms						
Supply voltage	MIPOW system						
Operating voltage	24 to 54 volt (nominal +48 volt)						
Current consumption	0.8 mA						
Capsule suspension	Silicone rubber						
Connection	XLR 3 pin						
Dimensions in millimeters	158 long 31 diam	•					
Weight in grams	325						
Finish	Satin Chrome						



# A Windscreen B Stand adaptor C Shockmount

# **Accessories:**

Accessories and description	Туре	Included	Optional
Microphone cable	3003 (or 3003 C*)	٠	
Stand adaptor (5/8" x 27 TPI)	1930/31	۲	
Shockmount (5/8" x 27 TPI)	1910/31		٠
Windscreen (grey)	V-96		۲
Windscreen Colored (red, yellow, blue, green)	VC-96		٠
Mains power supply (110/220 VAC)	832Ó/S		٠
Battery power supply	7325 C		۲
Carrying case (mike only)	Case 63		۲
Carrying case (complete)	Comp 63		9
Cardboard box			



\* only when microphone ordered with power supply



The two ring-switches are independent of each other as shown in figures below.

The potentiometer and the upper ring-switch are interdependent unless the potentiometer is set at "O". In this "O" position, the microphone remains fixed in Cardioid A pattern.

The lower ring selects maximum sensitivity or 12 dB pad, in both combination with flat or high pass response.

The upper ring together with the potentiometer selects the different pick-up patterns of Omni, Cardioid, Figure-eight or in-between settings.





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# <u>Milab</u> Dynamic microphone F-69

# Studio quality cardioid dynamic mike



# Features:

The F-69 studio dynamic cardioid combines the essential features of high output level, wide frequency range and light weight. It is well balanced for hand-held vocals. The F-69 has very little proximity effect which renders full natural sound quality whether in close or distant pick-up. Its' precisly controlled on-off axis response renders it unusually immune to feedback problems.

# **Description:**

- Full frequency range dynamic.
- Steel mesh protective grill.
- Precision machined solid case.
- High output level.
- Light weight, well balanced.
- 3-pin XLR male connector at the base.

# **Applications:**

Versatile, all-round microphone. Excellent for hand held vocals and for piano, brass and acoustic or amplified instruments.

Recommended for close to medium distance pick-up in studio, broadcast or live performance.



Directional nattern	Cardioid
Operating principle	Dynamic moving coil
Directivity index	12–15 dB
Frequency response	50–18.000 Hz
Sensitivity at 1 KHz	-54 dB/Pa
(over 200 ohms re. 1 V.)	

Output at 1 KHz (over 200 ohms re. 1 V.)	2.0 mV/Pa
Output impedance (balanced)	200 ohms
Connection	XLR 3 pin
Dimensions in millimeters	195 long 24/32 diam.
Weight in grams	175
Finish	Satin Silvergrey

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A Windscreen B Stand adaptor C Shockmount

ALLESSURES:			
Accessories and description	Туре	Included	Optional
Microphone cable	3003 C	۲	
Stand adaptor (5/8"x27 TPI)	1930/24	۲	
Shockmount (5/8"x27 TPI)	1910/24		٠
Windscreen (grey)	V-73	٠	
Windscreen Colored (red, yellow, blue, green)	VR-73, VY-73 VB-73, VG-73	10	٠
Carrying case (mike only)	Case		۲
Carrying case (complete)	CC-73		۲
Cardboard box	1	•	
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# Milab Condenser microphone MSXY-8 XY-8 XY-82 Stereo/mono condenser microphones



# Description of the microphones XY-8

# MSXY-8

- Two rectangular dual membrane variable remote controlled capsules of full condenser type.
- Extremely smooth on and off axis frequency response.
- Two separate FET preamplifiers.
- One capsule may rotate through 180 degrees.
- Two separate output signals from microphone and power/control unit.
- 200 ohms output impedance.
- Powering system: 120 VDC.
- Self noise: Less than 22 dBA.

- Two rectangular dual membrane capsules of full condenser type in fixed cardioid pattern.
- Extremely smooth on and off axis frequency response.
- Two separate FET preamplifiers.
- One capsule may rotate through 180 degrees.
- Two separate output signals from the microphone.
- 200 ohms output impedance.
- Powering system: MIPOW
- Self noise: Less than 18 dBA.

# XY-82

- Two single membrane capsules of condenser type in fixed cardioid pattern.
- Smooth on and off axis frequency response.
- Two separate FET preamplifiers.
- One capsule may rotate through 180 degrees.
- Two separate output signals from the micro-phone.
- 200 ohms output impedance.
- Powering system: MIPOW
- Self noise: Less than 16 dBA.

Microphone	MSXY-8	XY-8	XY-82
Directional pattern	Variable	Fixed cardioid Variable	Fixed cardioid Variable
Operating principle	Two dual membrane of full condenser capsules	Two dual membrane of full condenser capsules	Two single membrane condenser capsules
Directivity index (alternative D)	18–20 dB 35–40 dB	18–20 dB 35–40 dB	15–18 dB 35–40 dB
Frequency response	20–20.000 Hz	20–20.000 Hz	20–20.000 Hz
Sensitivity at 1 KHz (over 200 ohms re. 1 V.)	–46 dB/Pa	–42 dB/Pa	—34 dB/Pa
Output at 1 KHz (over 200 ohms re. 1 V.)	5.0 mV/Pa	8.0 mV/Pa	20.0 mV/Pa
Output at 1 KHz at max SPL (over 200 ohms re. 1 V.)	300 mV	300 mV	300 mV
Maximum SPL less than 1% dist.	150 dB	146 dB	138 dB
Self noise A-weighted (re. 2x10 <sup>-5</sup> Pa)	20 dB	18 dB	16 dB
Dynamic range	130 dB	128 dB	122 dB
S/N ratio at 1 KHz A-weighted	74 dB/Pa	76 dB/Pa	78 dB/Pa
Output impedance (balanced)	200 ohms	200 ohm	200 ohms
Supply voltage	120 volt via remote control unit 5815	MIPOW system (only one channel needs to be powered*)	MIPOW system (only one channel needs to be powered*)
Operating voltage	+120 volt	+48 <sup>+6</sup> volt _8 volt	+24 to +54 volt (nominal +48 volt)
Current consumption	1.6 mA	1.6 mA	0.8 mA
Capsule suspension	Silicone rubber	Silicone rubber	Silicone rubber
Connection	Lemo 8 pin	XLR 5 pin male	XLR 5 pin male
Dimensions in millimeters	285 long 33/24 diam.	285 long 33/24 diam.	165 long 27 diam.
Weight in grams	485	485	270
Finish	Satin Chrome	Satin Chrome	Satin Chrome

\* In this case the powered voltage will come out from the microphone on the other channel/signal.

# Accessories:

Accessories and description	Туре	Туре	Туре	Included	Included complete system	Optional
Microphone	MSXY-8	XY-8	XY-82		3	
Microphone cable (10 meters)	5808	3005	3005	•	•	
Signal cable (10 meters)	3005				٠	
Stand adaptor (5/8"x27 TPI)	1930/24	1930/24	1930/27	٠	•	
Shockmount (5/8"x27 TPI)	1910/24	1910/24	1910/27		•	٠
Windscreen (grey)			V-82			•
Windscreen Colored (red, yellow, blue, green)			VC-82			٠
Mains power supply (110/220 VAC)	5815	8320/S	8320/S		٠	٠
Battery power supply		7325/C	7325/C			۲
Carrying case (mike only)	Case 8	Case 8	Case 63	•		
Carrying case (complete)	Comp 8	Comp 8	Comp 63		•	
Cardboard box		4			- / 51	

# Alternative C

# Omni – Cardioid – Figure-eight

The two separate signals from the XY-8 or XY-82 may also be connected in series or parallel ahead of or with the help of the mixer. And if one of the capsules has been rotated 180 degrees from the other the three fixed pickup characteristics may be achieved as the figures show.



Alternative D

#### **PA-applications**

The XY-8 and XY-82 is the ideal solution where a PA-system gives problems with feedback. This technique has great advantage in concert hall sound enhancement and in outdoor performance where maximum gain before feedback is esential.

Rotate one capsule, adjust the angle and choose the best pickup pattern for cancelling the feedback. Increase the signal on one input and the directivity at the other to a maximum of 35-40 dB. By this method the maximum gain before feedback of nearly 40 dB may be achieved.







## Powering and running accessories

MSXY-8 is powered separatly from the power/control unit 5815 which also incorporates the remote control system.

XY-8 and XY-82 is powered with the standard MIPOW system. The working voltage is from 24 volt up to 54 volt. The current consumption is limited for both systems to a maximum of 0.8 mA. Note that the working voltage is only needed to be connected to one of the systems for the complete microphone.

To work the XY-8 or the XY-82 to perfection the mixing console, amplifier, tape recorder or whatever should be equipped with the following three functions:

1) Phase reverse switch for one channel or external phase-invert connector.

2) Separate gain controls (faders) for both inputs.

3) Mixing possibilities of the two inputs after the gain controls.

## Use as MS-Stereo

MSXY-8 is specially made for use with MS recording techniques. But the microphone may also be used in XY recordings and their variations.

#### Use as XY-Stereo

XY-8 and XY-82 is made for professional recordings in XY-stereo. The purpose is to achieve the best stereo effects using only two cardioid capsules. Those are mounted as close as possible and with the advantage of having one capsule rotatable through 180 degrees the effect of wideness in stereo can be adjusted as required.



Wiring principal for mono use



# **Omni – Cardioiod – Figure-eight**

With use of the gain control (faders) in the mixing console, amplifier, tape recorder etc., the microphone is connected to, the engineer may obtain patterns of omni, cardioid, figure-eight as well as in-between settings. This methode allows absolutely noise free variable pattern control right at the console without use of external "black boxes".

## **Alternative A**

Cardioid – Omni directional – Cardioid Connect the XY-8 or XY-82 to two separate mixer inputs. Rotate one capsule 180 degrees. Mix both signals after gain control. The figures show how the pickup patterns can be remote controlled by the faders at the mixing console.



## Alternative B

#### Cardioid - Figure-eight - Cardioid

Connect the XY-8 or XY-82 to two separate mixer inputs. Rotate one capsule 180 degrees. Reverse phase on one input. Mix both signals after gain control. The figures show how the pickup patterns can be remote controlled by the faders at the mixing console.





# XY-82



# "Zero point" of the microphone

When the microphone is used for stereo recordings with one signal out of phase (alternative B) is a silent angle accouring, the "zero point" of the microphone. This "zero point" turns in respect to the on ax of the microphone and the set angle between the fixed and rotatable capsules.



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PROFESSIONAL MICROPHONES SWEDEN

#### PRELIMINARY DATA

#### MODEL LC-25 TRANSFORMERLESS LINE LEVEL MICROPHONE

#### DESCRIPTION

The LC-25 is a cardioid condenser microphone. No transformers are used in any portion of the signal path. It delivers a balanced signal output at line level. Advanced design shock isolation permits use for hand held vocals. Finish is in black chrome with stainless steel grill.

## SPECIFICATIONS

Cardioid, pre-polarized condenser element TYPE Active balanced; 0.775v into a typical 1kHz input OUTPUT LEVEL impedance. Can deliver 15v into 10k ohms load. May be used unbalanced for single-ended inputs of 1k ohm or higher 20Hz to 20kHz; virtually flat from 30Hz to 15kHz FREQUENCY RESPONSE No transformers are employed in any part of the TRANSFORMERLESS microphone or in the signal path 15dB at 100Hz, 25dB at 1kHz DIRECTIVITY INDEX less than 1% THD at 130dB SPL MAXIMUM dB SPL less than 25dB (re:0.00002 Pa) SELF NOISE MIPOW System, nominal 48vDC SUPPLY VOLTAGE Shock and vibration isolated in silicone rubber CAPSULE SUSPENSION CURRENT CONSUMPTION 3mA at idle; 15mA at 130dB SPL Recommended: Milab Model 8320-S (will operate two POWER SUPPLY LC-25 microphones) Corroblack; black chrome plate on solid brass with FINISH black stainless steel grill 11.5 ounces; 7-1/4 inches long WEIGHT/DIMENSIONS Shock mount, stand adaptor, windscreen and 20 dB ACCESSORIES resistive pad (for standard mic inputs) included August 1981 AVAILABILITY

Distributed by: Cara International Ltd., PO Box 9339, Marina del Rey, Ca. Marina del Rey, CA. 90291. Tel: (213) 821-7898

Omni-directional	S/N-ratio at 1 KHz A-weighted	68 dB/Pa			
One single membrane	Output impedance (balanced)	200 ohms			
condenser capsule	Supply voltage	AD/MIPO	W <sup>TM</sup> system		
30–20.000 Hz	BD/Self Powered				
–40 dB/Pa	Operating voltage	AD/24 to 54 volt (nominal +48 v BD/6 to 15 volt		inal +48 volt)	
10.0 mV/Pa	Current consumption 0.8		0.8 mA		
	Type of battery BD	Two/PX-23 (2x5.6 volt)		t)	
150 mV	Connection	XLR 3 pin			
. 140 dB	Dimensions in millimeters long x diam	mike 11x19	adaptor 80x19	battery pack 125 x 19	
26 dB	Weight in grams	35	95	135	
114 dB	Finish	Satin Chrom			
	Omni-directional One single membrane condenser capsule 30–20.000 Hz -40 dB/Pa 10.0 mV/Pa 150 mV . 140 dB 26 dB 114 dB	Omni-directionalS/N-ratio at 1 KHz A-weightedOne single membrane condenser capsuleOutput impedance (balanced)30–20.000 HzSupply voltage-40 dB/PaOperating voltage10.0 mV/PaCurrent consumption150 mVType of battery BD150 mVConnection. 140 dBDimensions in millimeters long x diam26 dBWeight in grams114 dBFinish	Omni-directionalS/N-ratio at 1 KHz A-weighted68 dB/PaOne single membrane condenser capsuleOutput impedance (balanced)200 ohms30–20.000 HzSupply voltageAD/MIPO BD/Self P-40 dB/PaOperating voltageAD/24 to BD/6 to 110.0 mV/PaCurrent consumption0.8 mA150 mVType of battery BDTwo/PX-23150 mVDimensions in millimeters long x diammike 11 x 1926 dBWeight in grams35114 dBFinishSatin Chru	Omni-directionalS/N-ratio at 1 KHz A-weighted68 dB/PaOne single membrane condenser capsuleOutput impedance (balanced)200 ohms30–20.000 HzSupply voltageAD/MIPOWTM system BD/Self Powered-40 dB/PaOperating voltageAD/24 to 54 volt (nom BD/6 to 15 volt10.0 mV/PaCurrent consumption0.8 mA150 mVType of battery BDTwo/PX-23 (2x5.6 volt140 dBDimensions in millimeters long x diammike 11 x 1926 dBWeight in grams3595114 dBFinishSatin Chrom	



A Windscreen B Mike clip C Belt clip

# Accessories:

Accessories and description	Туре	Included	Optional
Microphone cable	3003 C	۲	
Mike clip	4426	۲	
Belt clip	4436	•	
Windscreen (grey)	V-4	•	
Windscreen Colored (red, yellow, blue, green)	VR-4, VY-4 VB-4, VG-4		٠
Mains power supply (110/220 VAC)	8320/S (CL-4 AD)		
Battery power supply	7325 C (CL-4 AD)		
Type of battery	see below (CL-4 BD)	۲	
Carrying case (complete)	Comp		
Cardboard box		۲	

Type of battery: Two/PX-23 IEC INT NO 4NR 08





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# <u>Milab</u> Electret microphone CL-4 AD Lavalier omni-directional mike



# Features:

The CL-4 is available in two versions; the CL-4 AD is for operation on 48 volt MIPOW<sup>™</sup> system, and the CL-4 BD is self-powered with two standard 5.6 volt batteries. In the BD battery powered version, the battery is automatically turned off when the mating XLR signal cable is disconnected. The pick-up pattern is omni-directional as the CL SERIES is designed to be used as a lavalier microphone for placement on the chest or brest

pocket. Signal output is high with very low self noise with audio quality commensurate to a full condenser microphone.

# **Description:**

- Circular singel membrane condenser capsule.
- Single FET pre-amplifier in mic head.
- Miniature lavalier weight less than 35 gms/oz.
- 200 ohms, balanced output.
- Two meter integral cable between mic head and adaptor or battery pack.
- 3-pin XLR male connector at the base of adaptor/battery pack.

# Applications:



The CL-4 SERIES microphones are designed primarily for voice applications in conference and television ENG recording. But, because of their excellent dynamic and frequency response characteristics, they are being employed in studio recording work on acoustic instruments. Particularly impressive is the CL-4 placement within the acoustic guitar, or other string instrument, beneath the bridge and facing the open strings.