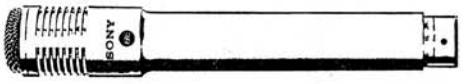
SONY®

ELECTRET CONDENSER MICROPHONE

ECM-33F



Owner's instruction manual

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The newly designed Sony Electret Condenser Microphone ECM-33F is a high-quality, high-performance microphone, and beautifully suited to the requirements of recording and broadcast studios, public address, sound reinforcement and other professional or semi-professional applications.

FEATURES

The ECM-33F utilizes the newly developed back-electret condenser capsule, which results in a high-quality sound pickup with excellent transient characteristics over a wide frequency range.

The ECM-33F, due to its uni-directional characteristics, is more sensitive to sound from the front than from the side or back, thereby minimizing inadvertent pickup of background noise.

The ECM-33F uses an FET (Field Effect Transistor) as an impedance translator which assures low noise, high sensitivity, and stable performance.

The ECM-33F can be battery powered for an extended period of time. And it can also be phantom powered from an external power supply (24 – 54 V DC) without any additional conductors or cables.

The external power supply system is an internationally accepted standard which permits complete interchangeability of microphones, regardless of type.

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SPECIFICATIONS

Type	Electret Condenser Microphone ECM-33F
Capsule	Back-electret condenser capsule
FET	Sony conjuction FET
Battery	EVEREADY 206 dry battery, E-126 mercury battery or equivalent
Microphone cable	5.2 mm dia. × 6 m (0.205" dia. × 20 ft.) 2-conductor cable with CANNON connectors XLR-3-11C and XLR-3-12C
Frequency responce	20 – 20,000 Hz
Directivity	Uni-directional
Output impedance	250Ω ± 20% at 1,000 Hz, balanced

Output level

Position of the Pad Switch	Output impedance	Effective output level*	Open circuit voltage
0	250Ω	−53.8	0.2 mV/μbar
−8	250Ω	−61.8	0.08 mV/μbar

* 0 dBm = 1 mW/10 μbar

Output level deviation is ± 2 dB.

Recommended load impedance is more than 3 k ohms.

Power supply	Normal operating voltage; 9 V DC Minimum operating voltage; 7.5 V DC Current drain; less than 0.5 mA (with battery) less than 5 mA (with external power supply)
Battery life	Approx. 500 hours with EVEREADY 206 Approx. 1,000 hours with EVEREADY E-126
	Accepts external power supply of 24 – 54 V DC
Noise level	S/N ratio; more than 46 dB (1,000 Hz, 1 μbar) Inherent noise; less than 28 dB SPL (0 dB = 2×10^{-4} μbar) Wind noise*1; less than 45 dB SPL (with wind screen) less than 65 dB SPL (without wind screen) Induction noise of external magnetic field*2; less than 5 dB SPL/m gauss

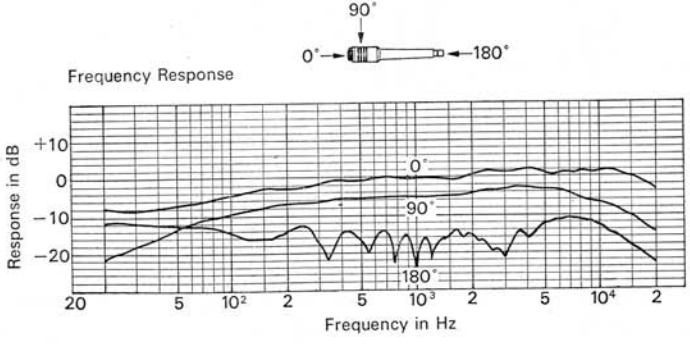
*1 Wind noise is the value measured by applying a wind velocity of 2 m/s. (6.6 ft./s.) from all directions to the microphone. The mean value is taken and converted to the equivalent input sound level.

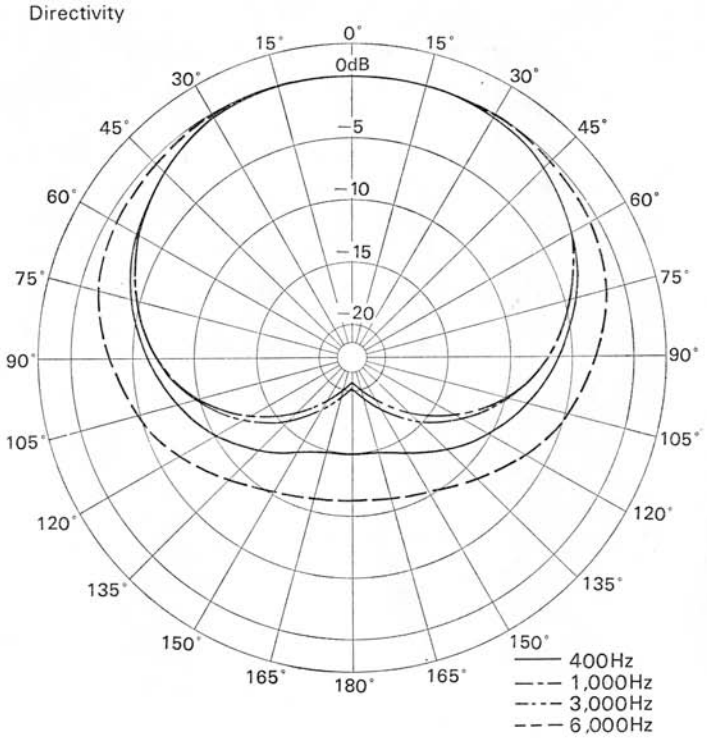
*2 The external magnetic field induction noise is measured with the microphone placed in the alternating magnetic field of 50 Hz, 1 m gauss. The maximum noise value is taken and then converted to the equivalent input sound level.

Maximum sound pressure input level	Approx. 132 dB SPL (40 – 20,000 Hz) Approx. 134 dB SPL (100 – 20,000 Hz)
Dynamic range	Approx. 106 dB

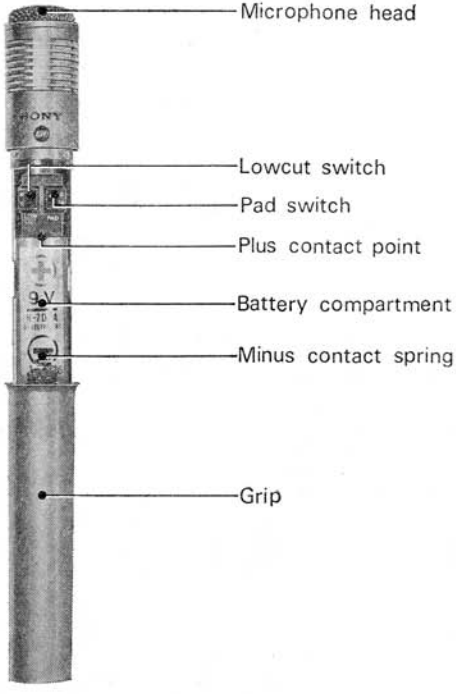
Dimensions	27 mm dia. ×176 mm (1.06" dia. × 6.94")	
Weight	185g (6.5 oz) (without cable and battery)	
Environmental temperature for preservation	−4°F to 140°F (−20°C to 60°C)	
Environmental temperature for proper operation	32°F to 140°F (0°C to 60°C)	
Supplied accessories	Wind screen	(1)
	Microphone holder	(1)
	Carrying case	(1)
	Microphone cable	(1)
	Stand adaptor (PF1/2 to NS 5/8)	(1)
Optional accessories	Power supply AC-148F	
	Shock mount suspention cradle CRS-3P	

Design and specifications subject to change without notice.





PARTS IDENTIFICATION



PRECAUTIONS

- Keep the microphone away from extremely high temperature (above 140°F or 60°C).
- If the microphone is not to be used for a long time, or is operated on an external power supply, remove the battery to avoid any possibility of corrosion.
- In case of battery leakage, wipe off any deposits left in the battery compartment.
- If the microphone is placed too near the speakers, a howling effect (acoustic feedback) may occur. In this case, change the direction of the microphone until the howling stops, or decrease the speaker volume.
- Microphone and recording instruments should be turned on ten minutes before they are actually used. (Generally, it is said that a 30-minute preparatory operation is adequate.) This assures stable performance of the microphones and instruments.

CONNECTIONS

The microphone cable has a CANNON connector XLR-3-11C at one end and a XLR-3-12C at the other end. Insert the XLR-3-11C plug into the microphone, and the XLR-3-12C plug into the microphone input of your equipment such as a tape recorder, an amplifier, a mixer, etc..

The mirophone cable is 6 m (20 feet) long. If a longer cable is necessary, an extension cable up to 60 m (200 feet) may be used without affecting sound quality or performance.

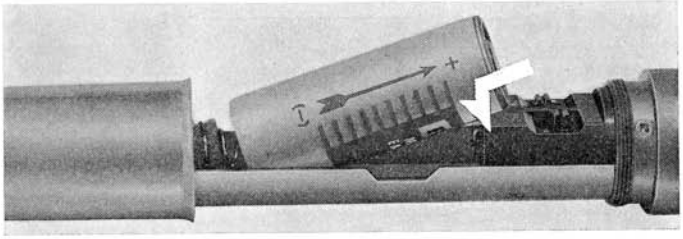
POWER SOURCES

The ECM-33F can be operated from two power sources; an internal battery and an external power supply.

BATTERY

The ECM-33F requires a mercury battery (E-126) or a dry battery (206). Since the power consumption is less than 0.5 mA, the battery will last for an extended period of time. (As a reference, an E-126 battery will provide approx. 1,000 hours of continuous operation.)

1. Disconnect the microphone cable connector (CANNON plug XLR-3-11C) from the microphone.
2. Turn the microphone grip counterclockwise. The grip will not fall out, because a newly developed "stopper" device is employed.
3. Insert a battery into the battery compartment, pressing the minus ⊖ side of the battery against the spring contact.



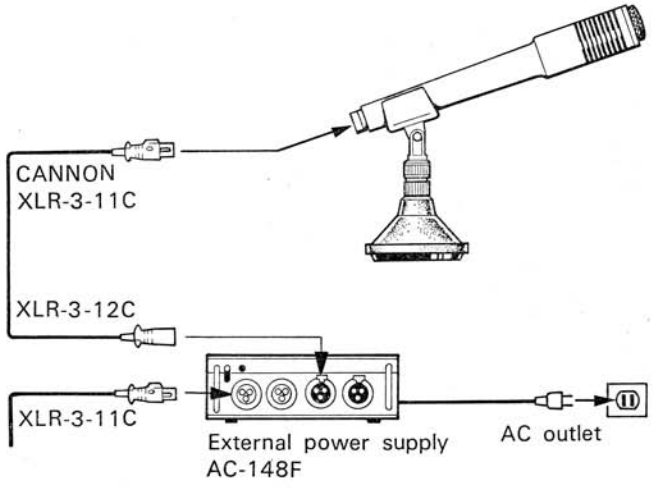
4. Replace the microphone grip by turning it clockwise.

Note: When the battery is exhausted, it will cause distortion at high sound levels. When this occurs, replace the battery.
If the termial voltage is less than 7.5 V, the microphone will become inoperative.

EXTERNAL POWER SUPPLY

The Sony External Power Supply AC-148F is recommended as an optional accessory.
The AC-148F will power any two microphones with phantom capability (24 – 54 V DC).
For setup and operating instructions, refer to the AC-148F instruction manual. For detailed information on "External Power Supply System" see page 9.

Note: As far as the external power supply system is concerned, the ECM-33F must have balanced output connections. Therefore, use balanced-type cable for extending the cable between the power supply and the ECM-33F.



BATTERY SAVER

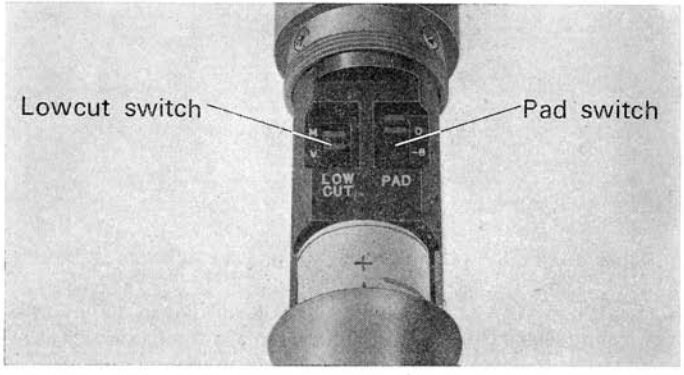
A unique built-in battery saver on-off switch is incorporated in the ECM-33F to prolong battery life.
When the plug of the microphone cable is inserted into the connector of the microphone, the built-in on-off switch is automatically activated. When the plug is removed from the connector, the switch is automatically cut off.

LOWCUT SWITCH

Set the Lowcut Switch according to the sound pickup circumstances.

On "M" (Music) position:
Usually, the "M" position is used for music. However, some room acoustics emphasize low frequencies resulting "boomy" sound pickup. In this case, set the switch to "V" position even if you pickup music programs.

On "V" (Voice) position:
When microphone is used at extremely close proximity (one inch or less) to the sound source, there may be a boosting of the bass response. The "V" position is preferrable for close-miking of voice, and in situations where air conditioners or other low-frequency ambients are encountered. At the "V" position, bass is extremely attenuated.

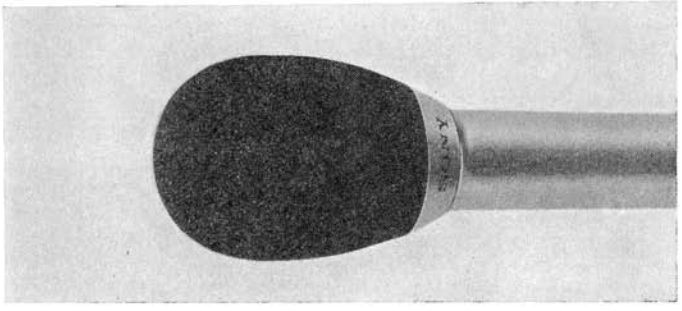


PAD SWITCH

Use the Pad Switch for preventing overload of the microphone impedance translator, resulting from the pickup of excessively high level sound sources.
On "0" dB position: Microphone provides normal performance.
On "−8" dB position: Microphone output level is reduced by approx. 8 dB. This allows even higher sound levels to be reproduced without distortion.

WIND SCREEN

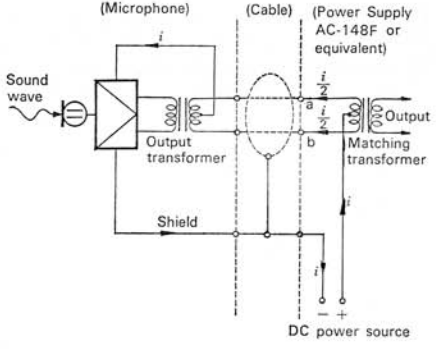
The wind screen does not degrade performance in any way and should be used at all times. It will virtually eliminate "pops" when picking up voice and will reduce wind noise in outdoor applications. The wind screen also protects the capsule from shock, moisture and dust.



EXTERNAL POWER SUPPLY SYSTEM

The ECM-33F is designed for external powering (24 – 54 V DC) as well as internal battery power.
The external power supply system consists of a DC power source, the standard two-conductor microphone cable, and the center-tap transformer of the microphone.
Sony External Power Supply AC-148F is recommended as an optional accessory.

In this form of powering, the supply current (positive potential) is fed to the center-tap of the power supply transformer, and is conducted symmetrically via the "a" and "b" conductors whose original function is to carry the microphone output signals. Then this voltage is fed to the center-tap of the microphone transformer. (See illustration below.) The negative potential is sent through the shield, back to the powering source. The powering DC voltage is completely isolated from the output signal of the microphone, so that it does not affect the signal.



This powering system offers the following convenience:

Interchangeability with other types of microphones

The outlet of the power supply transformer may be connected to any other type of microphone (condenser, dynamic, ribbon, etc.) without causing noise interference or deterioration of the signal, since no voltage difference occurs between the "a" and "b" conductors. Improper polarity connections of "a" and "b" conductors will not affect operation of the ECM-33F.

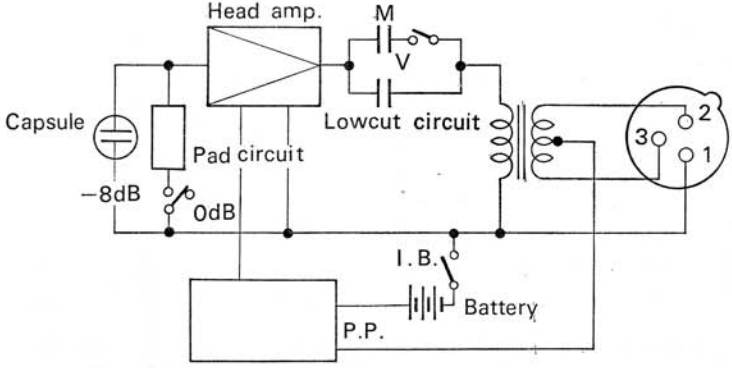
Simplified microphone setup

Once the power supply and matching transformer are setup, the ECM-33F is as convenient to use as any dynamic or ribbon microphone. There are no complicated power supply connections and no need to worry about a battery failure while the microphone is in use.

Maximum versatility

In permanent or semi-permanent studio installations, the external power supply system will, of course, be preferable to battery operation. However, the ECM-33F is not limited to use where AC power is available and may be battery powered for field applications. Thus the ECM-33F offers condenser microphone performance with the versatility of a dynamic microphone.

BLOCK DIAGRAM



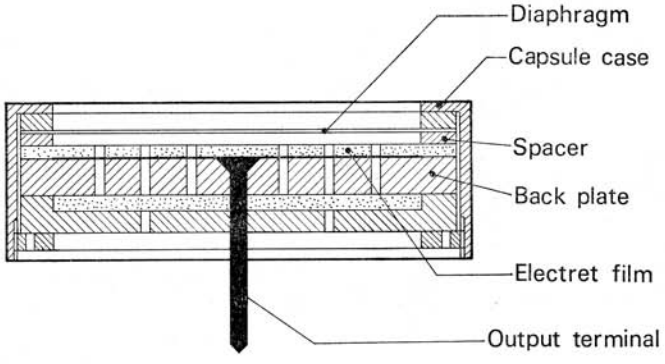
Automatic power source changing circuit

BACK-ELECTRET CONDENSER CAPSULE

After intensive research and critical listening tests it became apparent that the tone quality of the microphone is ultimately determined by the physical characteristics of the diaphragm material. The best material now available is a thin polyester film from 4 μm to 6 μm in thickness, used in conventional condenser microphones such as the Sony C-37P and C-47.

Sony engineers have developed a technique to adhere the electret material to the back plate, and have built a new electret capsule, called back-electret condenser capsule, which permits the use of a thin polyerster film of a micronic order of thickness as the diaphragm instead of the thicker film used in the conventional electret condenser microphone. The construction is as shown in the right column.

The thinner diaphragm assures high compliance because of the reduction of its mass, which results in a great improvement of the frequency response and directivity at low frequencies, and improves the transient characteristics over the entire frequency range. This makes possible electret condenser microphones having response characterirstics equivalent of laboratory grade condenser microphones.



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