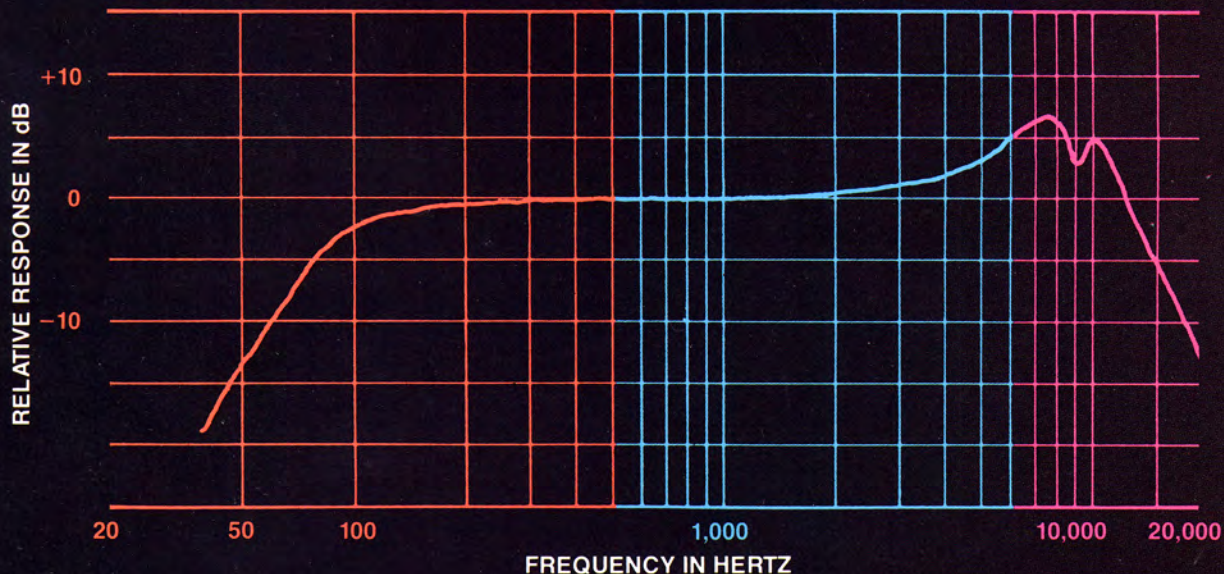




**PRO TECH SOUND**  
**SM85**  **SHURE**  
**CONDENSER MICROPHONE**

# new SHURE<sup>®</sup> SM85 PRO TECH SOUND

COMES TO A HAND-HELD  
CONDENSER MICROPHONE IN  
THREE CRITICAL FREQUENCY BANDS.



## CONTROLLED LOW END

The SM85 has a controlled low-frequency rolloff that minimizes mechanical vibrations, handling noise, and the "boominess" sometimes associated with close-up hand-held use. The rolloff is specially tailored with a slope to insure flat, precise reproduction of close-up low-frequency music and vocals.

## HIGH-DEFINITION MID-RANGE

The response of the SM85 in the important mid-range is especially tailored in the Shure tradition for superb vocal reproduction. It adds "crispness" and presence through carefully placed accentuation in the major voice frequencies. Gives your voice a clear, sharply defined sound that really sets it apart from instrumental backup.

## A CRISP UPPER REGISTER

Highs that *sizzle*... and delight the ear! The SM85 offers the professional vocalist clean, clear, scintillating highs which delineate subtle overtones and enhance high-frequency timbre to impart a distinctive, exciting sound to vocal artists. Performers and soundmen who've heard it agree—you can hear the high-end difference.



# PROTECH ENGINEERING

## MAXIMIZED REJECTION OF POP...

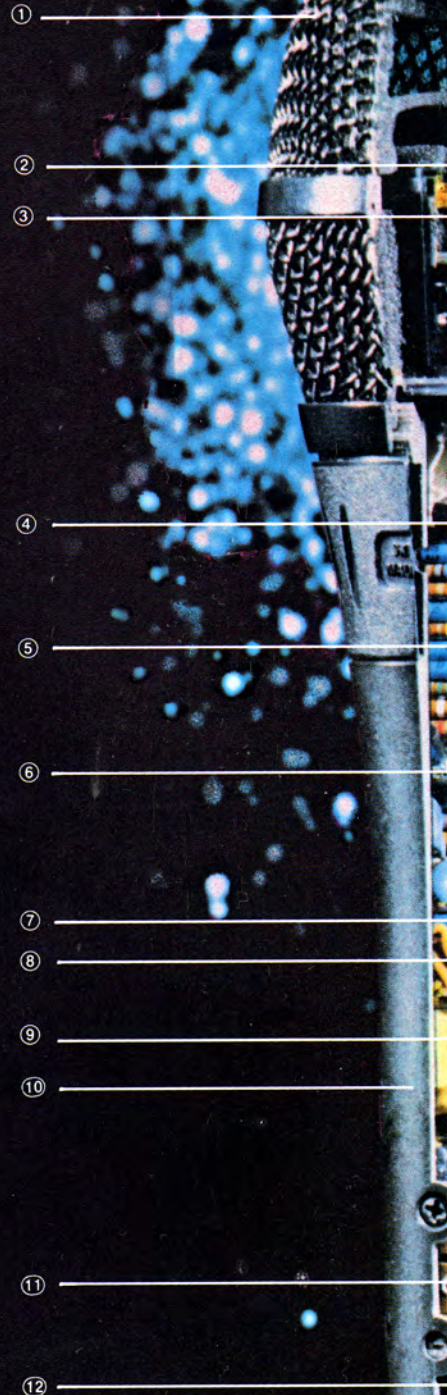
The three-stage integral wind and pop filter is extremely effective for ordinary wind and breath pop noise. For adverse wind and pop conditions, as in outdoor applications, the SM85 is furnished with an accessory windscreen.

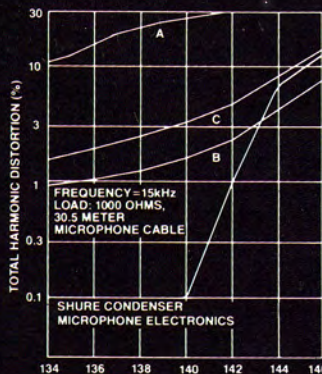
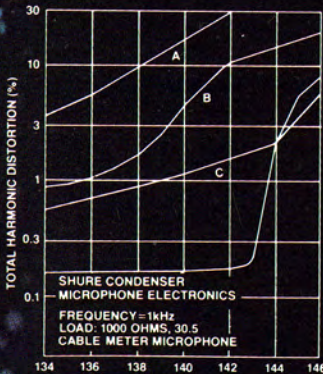
## AND MECHANICAL NOISE

In addition, Shure's exclusive elastomer "space-frame" isolates and cushions the SM85 condenser element from virtually all mechanical vibration, including hand-held and stand-borne mechanical noise.

## THE INSIDE STORY

- ① Rugged TEFLON® -coated steel mesh grille is durable and provides cartridge protection and shielding.
- ② Three-stage "pop" filter controls explosive breath and wind noises.
- ③ Condenser element has unidirectional pickup pattern for maximum rejection and minimum coloration of off-axis sounds.
- ④ Field-effect transistor impedance converter insures low noise and low distortion.
- ⑤ Low-frequency rolloff filter minimizes handling noise and proximity effect.
- ⑥ Class A amplifier provides low distortion and high output level capability.
- ⑦ Power supply regulator allows operation over a wide range of simplex voltages.
- ⑧ MUMETAL shield guards against hum and interference from lighting or other electrical equipment.
- ⑨ Output transformer minimizes electrical noise pickup from the connecting cable.
- ⑩ Vinyl-coated aluminum alloy handle combines light weight with durability.
- ⑪ Radio frequency filter suppresses unwanted pickup from radio, television and communications transmitters.
- ⑫ Gold-plated contacts resist corrosion to insure reliable connections.

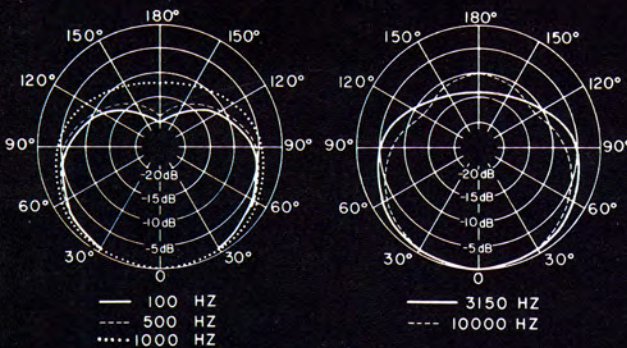




TOTAL HARMONIC DISTORTION vs. SOUND PRESSURE LEVEL  
(FOR SEVERAL PROFESSIONAL CONDENSER MICROPHONES)

## LOW DISTORTION ELECTRONICS

The SM85 exhibits remarkably low distortion (right up to its overload point) over the entire audio spectrum. The chart above shows the total harmonic distortion level at 1 kHz and 15 kHz, as well as distortion data for several other more expensive condenser microphones. In every case, the SM85 shows considerably less distortion.



## OPTIMIZED PICKUP PATTERN

The true cardioid polar pattern is uniform with frequency and symmetrical about its axis. This means off-axis sound coloration is virtually non-existent, giving the performer exceptional freedom of action and motion while using the microphone.

## TROUBLE-FREE THROUGHOUT

**Temperature and Humidity Immunity:** The SM85 can be used in environments that would cause failure in other condenser microphones. For dependable operation at high temperatures and humidity, the critical condenser diaphragm is constructed of a special, low-mass, high-strength material and coated with gold on both sides. The condenser diaphragm is then stabilized by a special thermal cycling process. All components used in the SM85 have been especially selected to insure long-term stability over a wide temperature range of  $-29^{\circ}\text{C}$  to  $57^{\circ}\text{C}$  ( $-20^{\circ}\text{F}$  to  $135^{\circ}\text{F}$ ) with relative humidity from 0 to 95%—and up to  $74^{\circ}\text{C}$  ( $165^{\circ}\text{F}$ ) with 50% relative humidity.

**RF and hum noise rejection:** The SM85 incorporates special shielding techniques and is unequalled for noise-free operation even in close proximity to magnetic hum fields such as studio lights, or strong RF fields as found near broadcast equipment.

## "UNIVERSAL" SIMPLEX POWERING

There's never a problem matching power supplies to the SM85. It operates over an *extremely* wide voltage range of 11 to 52 Vdc, covering both DIN Standard 45 596 simplex voltages of 12 and 48 volts, and the proposed 24-volt standard. It is designed for simplex (phantom) powering from an external supply such as the Shure Models PS1 and PS1E2, or directly from sound reinforcement, broadcast or recording equipment.



# PRO TECH PERFORMANCE

## PERFORMER PROOF

The SM85 is lightweight, yet it does not sacrifice ruggedness and reliability. It is designed to stand up to tough on-stage use—and abuse! It is constructed with a lightweight, yet extremely tough aluminum case, and a TEFLON®-coated all-steel grille.

As a result of its advanced design, the SM85 is capable of withstanding the physical abuse inherent to live, hand-held microphone use, while at the same time maintaining the highest quality performance expected of a studio condenser microphone. It is ideal for the most demanding live sound reinforcement applications as well as broadcasting and studio recording requirements.

## PERFORMANCE PROVEN

The SM85 sets a new standard for professional reliability! It was designed following the recommendations of dozens of professional, touring soundmen. All critical components have been extensively field-tested in live performances, as well as through Shure's singularly demanding quality assurance program. That means the SM85 Condenser must pass the same ruggedness and dependability tests required of legendary Shure dynamic microphones.

For example, every SM85 must be capable of withstanding at least six random drops from six feet onto a hardwood floor without significant alteration of its electroacoustical performance or damage to its case.

The condenser element, a component which traditionally keeps other condenser microphones "studio bound," is totally isolated from mechanical vibration and shock. The unique Shure-developed elastomer "space frame" isolation system, gives unsurpassed protection, making the SM85 the most versatile condenser microphone on the market.

# SM85 CARDIOID CONDENSER HAND-HELD PROFESSIONAL MICROPHONE

## SPECIFICATIONS

### MODEL SM85 Cardioid Condenser Hand-Held Professional Microphone

Available with or without cable:

**MODEL SM85** without cable

**MODEL SM85-CN** with 7.6m (25 ft) TRIPLE-FLEX® cable with three-pin professional audio connectors

**Type:** Cardioid condenser (electret bias)

**Frequency Response:** 50 to 15,000 Hz

**Polar Pattern:** Cardioid (unidirectional) response — uniform with frequency, symmetrical about axis

**Output Impedance:** Rated at 150 ohms (85 ohms actual)

Recommended minimum load impedance: 800 ohms (May be used with loads as low as 150 ohms with reduced clipping level)

**Output Level** (at 1,000 Hz):

Open Circuit Voltage ..... -74 dB (0.2 mV)

(0 dB = 1 volt per microbar)

**Clipping Level** (at 1,000 Hz):

800-ohm Load ..... -4 dBV (0.63V)

150-ohm Load ..... -15 dBV (0.18V)

**Total Harmonic Distortion:** Less than 0.25% (130 dB SPL at 250 Hz into 800-ohm load)

**Maximum SPL:**

142 dB with 800-ohm load

134 dB with 150-ohm load

**Hum Pickup:** -7.5 dB equivalent SPL in a 1 millioersted field (60 Hz)

**Output Noise:** (equivalent sound pressure levels; measured with true rms voltmeter)

29 dB typical, A-weighted

32 dB typical, weighted per DIN 45 405

**Dynamic Range:** 113 dB (maximum SPL to A-weighted noise level)

**Signal-to-Noise Ratio:** 65 dB (IEC 179)\* at 94 dB SPL

**Overvoltage and Reverse Polarity Protection:** Max. External Voltage Applied to

Pins 2 and 3 with Respect to Pin 1 ..... + 52 Vdc

Reverse Polarity Protection: ..... 200 mA max. (diode-clamped)

**Phasing:** Positive pressure on diaphragm produces positive voltage on pin 2 relative to pin 3

**Cartridge Capacitance:** 27 pF

**Power:**

Supply Voltage ..... 11 to 52 Vdc, positive pins 2 and 3

Current Drain ..... 1.0 mA to 1.2 mA

**Environmental Conditions:**

Relative Humidity 0 to 50% ..... -29° to 74° C  
(-20° to 165° F)

Relative Humidity 0 to 95% ..... -29° to 57° C  
(-20° to 135° F)

**Connector:** Three-pin professional audio\*\*

**Case:** Aluminum construction with black finish and black steel grille

**Dimensions:** 192 mm L x 48.8 mm Dia. (7-9/16 in. x 1-15/16 in.)

**Weight:**

Net ..... 180 grams (6.3 oz)

Packaged ..... SM85: 887 grams (1 lb, 15 oz)

SM85-CN: 1.47 kilograms (3 lb, 4 oz)

**Cable** (Model SM85-CN): 7.6m (25 ft), two-conductor, shielded, TRIPLE-FLEX® with three-pin and three-socket professional audio connectors (microphone connector is black finish)\*\*

## SUPPLIED ACCESSORIES:

Windscreen ..... 49A57

Swivel Adapter ..... A57E

Cable (supplied with SM85-CN only) ..... C97CN

\*S/N ratio is difference between microphone output at 94 dB SPL and microphone self-noise A-weighted.

\*\*Designed to mate with Cannon XL series, Switchcraft A3 (Q.G.) series, or equivalent connectors.

## Simplex Power Supplies:

### PS1 AND PS1E2

The Shure Models PS1 and PS1E2 are ac power supplies that provide simplex (phantom) power for one or two Shure SM81, SM82, SM85, or other condenser microphones. They contain a power switch, power-on indicator, and two three-pin and two three-socket professional audio connectors.

The PS1 and PS1E2 are identical except that the PS1 is designed to operate from 90 to 132 Vac, 50/60 Hz, and PS1E2 operates from 90 to 125 Vac or 180 to 250 Vac, 50/60 Hz (switch-selectable). In addition to the voltage selector switch and ac fuse, the PS1E2 is supplied with a detachable ac line cord (without power plug).

The PS1 (only) is listed by Underwriters' Laboratories, Inc. and is listed by Canadian Standards Association as certified.

### Model Features:

- Simplex power for one or two SM81, SM82, SM85, or similar condenser microphones.
- Low noise, hum and RF susceptibility.
- Short-circuit-proof operation.
- Handles both microphone and line level signals.
- Operates over wide ac voltage range.
- Professional audio connectors.
- Lightweight.
- Rugged construction.
- Listed by Underwriters' Laboratories, Inc. and Canadian Standards Association (PS1 only).

### Power Supply Specifications

**Type:** All silicon transistor power supply.

**Open Circuit Supply Voltage:** 21.5 ± 1.5 Vdc, regulated.

**Supply Voltage Polarity:** Positive (+) on microphone input connector pins 2 and 3; negative (-) on pin 1 and case.

**Typical Supply Operating Conditions (each channel):** 20V at 1.1 mA (with Shure Model SM85); 15V at 8 mA (with Shure Model SM82).

**Power Supply Resistors:** 1.69k ± 1% (two per channel).

**Frequency Response:** +0/-0.2 dB, 20 to 20,000 Hz (with SM85 microphone and 1k load).

**Maximum Operating Level:** Greater than +24 dBm.

**Short Circuit Supply Current:** 25 mA each channel (pins 2 and 3 to pin 1).

**Hum and Noise (20 Hz to 20 kHz, unweighted):**

Common Mode ..... -90 dBV max.

Differential Mode ..... -115 dBV max.

**Noise (300 Hz to 20 kHz, unweighted):**

Common Mode ..... -100 dBV max.

Differential Mode ..... -115 dBV max.

**Crosstalk:** -115 dB or less.

**Phasing:** Corresponding pins of all connectors are in phase.

**Operating Voltage:** PS1—90 to 132 Vac, 50/60 Hz ac only;

PS1E2—90 to 125 or 180 to 250 Vac, 50/60 Hz ac

only; Power consumption—3 watts max.

**Temperature Range:**

Operating ..... -7° to 57°C (20° to 135°F)

Storage ..... -29° to 71°C (-20° to 160°F)

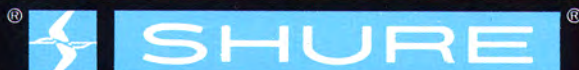
**Connectors:** Professional audio; three-pin (OUTPUT) and three-socket (MICROPHONE).

**Dimensions:** 60.3 mm H x 152 mm W x 175 mm D (2 3/8 in. x 6 in. x 6 7/8 in.).

**Weight:** 1.25 kg (2 lb, 12 oz).

**Construction:** Aluminum chassis with steel cover; finished in gray enamel.

**Certifications:** Listed by Underwriters' Laboratories, Inc.; listed by Canadian Standards Association as certified (PS1 only).



Shure Brothers Inc., 222 Hartrey Ave., Evanston, IL 60204

**The Sound of the Professionals®**