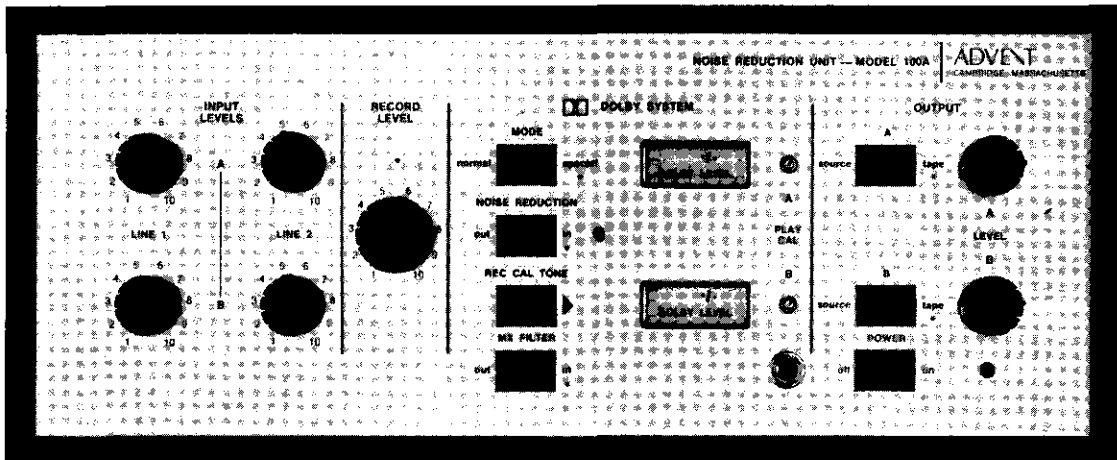


The Advent Model 100A Noise Reduction Unit.

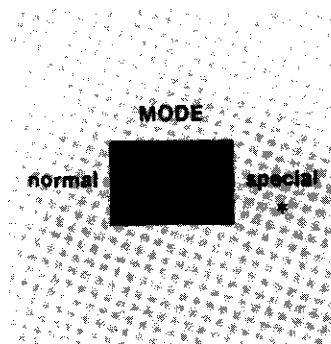


Advent Corporation
195 Albany Street
Cambridge, Massachusetts
02139
(617) 661 9500

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Why The Model 100A is Unique.

The Advent Model 100A Noise Reduction Unit is a convenient control center designed to take full advantage of the ever-increasing use of the famous "B-Type" Dolby System® of audio noise reduction. The widespread use of the Dolby System with home tape recorders, the rapidly growing catalogue of prerecorded Dolby-processed cassettes, and the application of the Dolby System to FM broadcasting have all contributed to our incorporating into the Model 100A a degree of flexibility found in no other noise reduction unit or recorder with Dolby circuitry built-in. In addition, the needs of those interested in serious live recording, so often a secondary consideration in equipment designed for consumer use, have been of equally important concern in the design of the Model 100A and its accessory microphone preamplifier, the MPR-1.



The Mode selector switch. First, the Model 100A is unique among all products incorporating the Dolby System because it can be conveniently used for all Dolby System applications likely to be encountered in elaborate music systems, both now and in the future. The key to the Model 100A's unprecedented flexibility of function is its Mode selector switch, which allows the Model 100A to be used to:

- 1 Make and play back Dolby-processed tape recordings on the recorder connected to it. (*Normal Mode.*)
- 2 Decode and simultaneously record Dolby-processed FM broadcasts. (*Special Mode.*)
- 3 Play back Dolby-processed tapes from other recorders connected to the stereo system. (*Special Mode.*)
- 4 Conveniently copy Dolby-processed tapes from other recorders connected to the stereo system. (*Special Mode.*)

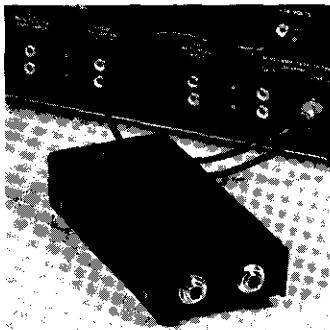
The Mode selector switch obviates the need for changing any connections when using the Model 100A for these various applications.

The MPR-1 microphone preamplifier. Second, for those with a serious interest in live recording, the Model 100A and its accessory MPR-1 stereo microphone preamplifier provide performance and flexibility that is unique in equipment designed for home use. In addition to providing wide frequency response and low noise, the MPR-1 incorporates several significant departures from the conventional microphone preamps found in home recording equipment.

The first of these departures is the MPR-1's ability to accommodate two low-impedance microphones with balanced outputs. Balanced microphones are necessary for interference-free recordings because they permit the use of three-conductor cables which guard against the pickup of extraneous noise from lighting fixtures, radio frequencies, and nearby hum fields. Most equipment designed for consumer use does not have provisions for balanced microphones because of the added cost required by the special input circuitry. As a result, such equipment requires the use of unbalanced microphones and cables which are highly susceptible to the kind of interference which can ruin an otherwise fine recording. (Although unbalanced microphones can be used with the MPR-1, balanced microphones should always be used when you have the choice.)

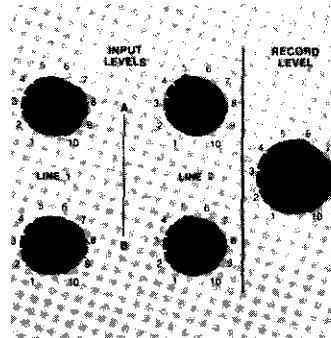
Details of the Model 100A.

In addition, a switch on the underside of the MPR-1 selects either 40 or 60 dB of gain. Because the output of a microphone varies markedly with its distance from the sound source, switchable gain permits much greater flexibility in microphone placement than does the usual fixed-gain microphone stage found in most home recording equipment. The best possible signal-to-noise ratio and lowest distortion are thus ensured in the widest variety of recording situations.



The cost of the MPR-1 is moderate because it operates from the Model 100A's power supply. It is provided as an optional accessory to avoid an undue imposition on those not interested in live recording. On the other hand, building into the Model 100A the kind of low-cost mic preamp stage usually found in home equipment would have compromised its live recording performance for those who have such an interest.

Mixing Facilities. Finally, the mixing facilities provided by the Model 100A are unmatched by other equipment designed primarily for consumer use. Two pairs of high level inputs are provided, with mixing controlled by a completely independent level control on each input and a unique Master Record Level control. Because the Model 100A can power as many as two MPR-1 microphone preamplifiers, a choice is thus offered of line and line mixing, microphone and line mixing, and mixing four microphones (two on each channel.) The combination of flexibility and high performance provided by the Model 100A and the MPR-1 obviate the need for investing in an expensive mixer for even the most elaborate recording situations.



The Model 100A connects to the tape monitor inputs and recording outputs of an amplifier or receiver, and the tape deck is in turn connected to the Model 100A. Other possible sources of Dolby-processed signals, such as an FM tuner or second tape deck, are connected as usual to the appropriate inputs of the amplifier.

The Model 100A uses two pairs of Dolby System circuits, one pair for making Dolby-processed tape recordings, and the other for decoding Dolby-processed tapes and FM broadcasts. The independent circuits allow for simultaneous tape monitoring when recording on a three-head tape deck. The Dolby System can be switched out of the circuit for program material which has not been Dolby processed.

The Model 100A has two mixable pairs of high level inputs, with an individual level control for each input. True mixing is possible because there is no interaction between any of the inputs or their individual level controls. A unique Master Record Level control is provided for setting the overall record volume of all inputs simultaneously, once the individual level controls have been used to achieve the desired balance. A switchable FM multiplex filter eliminates the possibility of multiplex subcarrier or pilot frequencies improperly triggering the Dolby circuitry on FM broadcasts, which could result in incomplete noise reduction.

Output level controls are provided for each channel. These also control a front-panel headphone jack provided for headphones of up to 600 ohms impedance. Independent source-tape switches for each channel permit not only monitoring the tape when recording with a three-head deck, but also such special recording techniques as sound-on-sound.

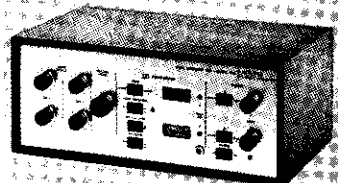
Complete facilities, including a built-in calibration tone oscillator, Dolby Level meters, and standard Dolby Level open-reel and cassette calibration tapes are included to match the Model 100A to virtually any tape deck.

Two 18-volt power supply jacks are provided on the rear of the Model 100A for powering as many as two MPR-1 accessory preamps.

Accessories for the Model 100A.

Two optional enclosures for the Model 100A are available from your Advent dealer:

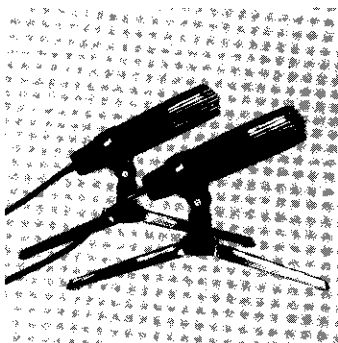
The WC-1 is a wood cabinet with an oil walnut finish.



The CC-1 is a black leatherette carrying case. Both the front and back covers of the case are removable for access to the controls and connections.



The Advent MDC-1 microphones combine high performance and moderate cost; they are particularly suited to the needs of the serious amateur recordist. The MDC-1's have low impedance balanced outputs to ensure interference-free recording, and come with 20' balanced cables terminating in phone plugs for connection to the MPR-1. The pick-up pattern is of the cardioid variety (moderately directional), which has proven to be the most appropriate pattern for making good recordings under the widest variety of circumstances. The performance of the MDC-1 is directly comparable to the majority of dynamic microphones available at any cost.

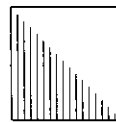


The MDC-1 microphones come as a stereo pair in a convenient foam-filled carrying case, complete with cables and connectors appropriate to the MPR-1, two tripod table stands, and stand adaptors.

How the Dolby System works.

Making an ordinary recording.

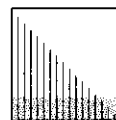
Music. Music is made of sounds of different loudness separated by intervals of silence. Loud and soft sounds are here shown as long and short lines. The music represented by this diagram starts loud and gradually becomes very quiet.



Noise. Any recording tape, even the best "low noise" kind, makes a constant hissing noise when played.

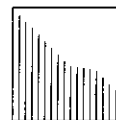


Music and Noise. When a tape recording is played, the noise of the tape conceals the quietest musical sound and fills the silence when no sound should be heard at all. Only when the music is loud is the noise not usually heard.

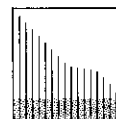


Making a Dolby System recording.

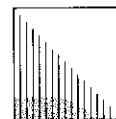
What the Dolby System does first. Before the recording is made, the Dolby System monitors the music to find the places where a listener might later be able to hear the noise of the tape. This happens mainly during the quietest parts of the music. When it finds such a place, the system automatically increases the volume so that the music is recorded louder than it would be normally.



The Recording. In a Dolby System recording, the parts of the music which have been made louder stand out clearly from the inevitable tape noise.



What the Dolby System does during playback. When the tapes are played on a high fidelity tape recorder equipped with the Dolby System circuit, the loudness is automatically reduced in all of the places at which it was increased before recording. This restores the music to its original loudness again. At the same time, the noise which has been mixed with the music is reduced in loudness by the same amount — usually enough to make it inaudible.



enefits of the lby System.

basic virtue of the Dolby System incorporated in the Model 100A is well-known and widely accepted: it reduces the hiss level of tapes and broadcasts processed and decoded with it by as much as 10 dB, with no noticeable effect on the musical content of such signals.

When added to a good tape recorder, the amount of noise reduction provided by the Model 100A is enough to virtually eliminate tape hiss as a practical consideration. The Model 100A provides a striking improvement in the clarity and definition of music instruments, and quiet passages previously "dusted" with tape hiss emerge for the first time. For live recording, a good open reel recorder at 7 1/2 ips combined with the Model 100A will outperform the finest professional equipment operating at 15 ips without Dolby.

For making tape recordings of broadcasts and other recorded material, 3 3/4 ips (and in some cases 1 7/8) is usually the highest speed necessary for critical recording. The benefits of lower-speed recording are many, including a substantial reduction in the cost of accurate tape recordings, and of wear and tear on the recorder's heads.

The Model 100A can be the key to full enjoyment of cassette recording, including the proper playback of Dolby-processed commercial cassette releases, the most of which provide a new dimension of audio perfor-

Using the Model 100A to decode Dolby-processed FM broadcasts results in a reduction by 10 dB of the noise in the received signal and the tuner itself, a particularly important consideration in FM stereo multiplex broadcasting. This not only reduces the effects of such problems as SCA interference (the background "chatter" on some stereo stations), but can also make previously noisy, distant stations more listenable, thereby effectively increasing the tuner's sensitivity.

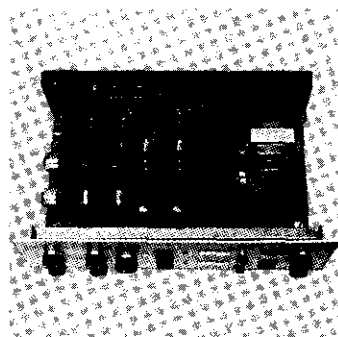
Benefits of using an external Noise Reduction Unit.

Those with a serious interest in open-reel recording with the Dolby System are now faced with a choice of combining a Noise Reduction Unit such as the Model 100A with a new or existing recorder, or of purchasing a similar recorder with Dolby circuitry built-in. The following should be kept in mind when making this choice:

First of all, those who already own a satisfying open-reel recorder may find it less expensive to add a Model 100A with its unique benefits than to trade the existing recorder in on a similar recorder with Dolby built-in.

Also, although the initial cost of a recorder with built-in Dolby circuitry can be slightly lower than the cost of an equivalent conventional recorder combined with the Model 100A, the Model 100A provides significantly greater flexibility. Only by having a separate Noise Reduction Unit can one Dolby System be used with several recorders and for decoding Dolby-processed FM broadcasts. Furthermore, only the Model 100A with its unique Mode selector switch can be used so conveniently for these multiple purposes.

Finally, the performance and flexibility for live recording of the Model 100A and its companion MPR-1 microphone preamplifier are unparalleled. The Model 100A combined with the MPR-1 adds to a good recorder the kind of control flexibility, mixing ability, and such necessary facilities as balanced microphone inputs that most home recorders lack (including those with the Dolby System built-in.)



Six plug-in modules are employed in the construction of the Model 100A.

Specifications of the Model 100A.

Inputs:	General Specifications Four individual (two on each channel) high level inputs, each with its own individual level control.	Output:	than 30 dB down at 19 kHz, and greater than 20 dB down at 38 kHz. 500 mv at Dolby Level, low Z.
Mixing:	Two mixable inputs on each channel. All four inputs are controlled by a master Record Level control.	Input Sensitivity:	Playback Section 100 mv for Dolby Level (OVU).
Outputs:	Two individually controlled preamp outputs (one for each channel). Front panel stereo headphone output. Two rear panel 18 Volt jacks for powering two accessory MPR-1 microphone preamps.	Input Impedance:	25,000 ohms minimum.
Monitoring:	Separate record and playback sections retain full source-tape monitoring when used with a recorder that incorporates this feature.	Bias Filter:	Low pass filter for eliminating bias and bias (supersonic) noise from output signal of tape recorder. Flat at 20 kHz. 3 dB down point is 28 kHz. with an 18 dB per octave roll-off thereafter.
Sound on Sound:	Separate source-tape switches for each channel permit convenient sound on sound recording on monitoring tape decks.	Output:	With OUTPUT LEVEL controls at maximum, 1.0 volt from Dolby Level, low Z.
Metering:	Complete metering facilities, including a built-in calibration tone oscillator, are provided for precise level calibration of the Dolby System.	Mechanical Specifications	
		Front Panel:	12 ⁷ / ₈ " x 4 ⁷ / ₈ "
		Chassis Size:	11 ³ / ₄ " x 4 ¹ / ₈ " x 7 ¹ / ₂ " deep
		Overall Height with Feet:	5"
		Overall Depth with Knobs:	8 ³ / ₄ "
		Power Requirements:	120 volts AC, 50/60 Hz. A universal 120/240 volt Model 100A is available on special order at slight additional cost.
Response:	Overall Performance 20-20,00 Hz ± 1dB.	Inputs:	Specifications of the MPR-1 2 low-impedance, balanced microphone inputs.
Distortion:	0.1% THD at Dolby Level* at any frequency from 20-20,000 Hz. 0.1% IM distortion at Dolby Level.	Recommended microphones:	50-600 ohms, balanced or unbalanced.
Total Noise:	70 dB below Dolby Level	Gain:	40 or 60 dB, switchable.
Dynamic Range:	85 dB.	Distortion:	Less than 0.2% THD at 1 volt output.
Noise Reduction:	-10 dB at 4,000 Hz and above 9 dB at 2,400 Hz 6 dB at 1,200 Hz 3 dB at 600 Hz	Maximum output:	3.0 volts rms (40 dB gain). 4.5 volts rms (60 dB gain).
Input Sensitivity:	Record Section (Line 1 and 2) 60 mv for Dolby Level (OVU).	Equivalent input noise:	0.4 microvolts rms (200 ohm source).
Input Impedance:	25,000 ohms minimum.	Recommended load impedance:	10,000 ohms or higher.
MX Filter:	19 kHz and 38 kHz notch filters to prevent false triggering of the Dolby System by FM multiplex subcarriers. With MX FILTER in, response is less than 1 dB down at 15 kHz, greater	Current drain:	3 milliamperes.
		Dimensions:	5 ³ / ₄ " x 2 ³ / ₄ " x 1" high.
			<i>All specifications subject to change without notice.</i>
			<i>*In open-reel recording, Dolby Level is the same flux level on the tape as Ampex Operating Level. For cassettes, Dolby Level is defined as a flux level on the tape of 200 nano-Webers per meter.</i>