Technics RS-M95

Professional Series

Quartz Phase-Locked Direct-Drive Stereo Cassette Deck with Microprocessor Tape Tension Control, New HPF 3-Head System, Metal Tape Selector, Fine Bias Adjustment, and Peak/VU FL Meters

AUDIO / HI-FI

Metal Tape Recording

RS-M95 A Revolutionary Cassette Deck for The New Age of Metal Tape Recording

With metal tape, the RS-M95 pushes cassette performance near the limits of its potential—linear high level recording, wider dynamic range, extended high frequency response, excitingly rich sound quality.

3-Head Configuration

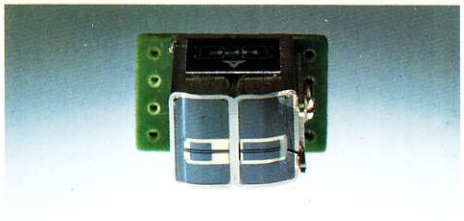
Specially Designed HPF Record and Playback Heads

The incredible new metal recording tape has finally arrived. Compared to any of the oxides you may have used, metal tape offers extremely high output across the entire audio spectrum, and particularly in the high range. You can get much wider dynamic range, extended frequency response and comparatively lower distortion, even with very high input levels.

To give you the most from this new medium, Technics has designed the RS-M95 with three heads, each designed for its special role in the recording and playback process.

For low distortion, the recording head gap is set at a precise 5μ. The playback head's tiny 1μ gap provides a new level of high range frequency response. Both heads feature a special version of Technics' own HPF material for the gap and core to raise the saturation flux density to the heights needed for high input metal tape recording.

Azimuth error, often a problem in 3-head cassette decks, has been virtually eliminated by our integral, combination head design and precision processing of the HPF head material. This contributes significantly to flat low-frequency response and ameliorated contour effect.



Sendust/Ferrite Erase Head—The Perfect Match for Metal Tape

While metal tape makes possible high density recording, one of the reasons it has not been available sooner is that it is so difficult to erase. Conventional heads are not designed to handle the higher erasure current that is required.

The RS-M95 uses a completely new type of

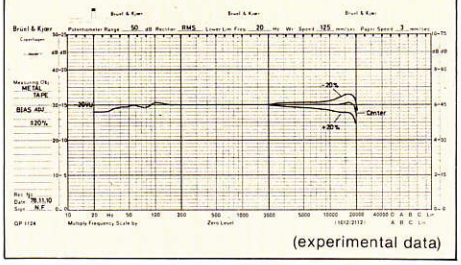
erase head. For the gap area, it employs sendust alloy having a high maximum flux density and superb abrasion resistance. The special ferrite core exhibits no significant temperature rise, even with the approximately 50 % higher erasure current used. With its highly efficient double-gap configuration, this remarkable head provides more than sufficient erasing effectiveness all the way into the low frequency range.

4-Position Tape Selector plus Presettable Bias Fine Adjustment

To bring out its full potential, metal tape needs about twice the recording bias current of normal tape, plus specialized (recording) equalization to deal with its high frequency characteristics. Therefore, the M95 not only has the conventional three positions on its tape selector, it also features a metal position especially for the new breed of metal particle tapes.

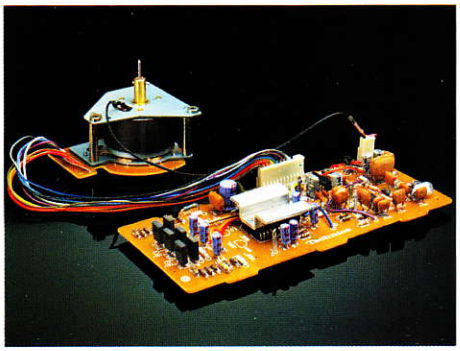
On top of this, you get added flexibility by using independent fine bias adjustment knobs for each tape type. These can be set for ±20% of the conventional bias current to deal with each and every brand of tape. And the built-in oscillator provides 400Hz/8kHz test-tone signals for use in this calibration. Since the knobs are independent, you can preset them for the kinds of tape you use within each class. At the center click-stop positions the bias current is: normal 100%, FeCr 115%, CrO_2 135%, metal 200%.

Fine Bias Adjustment Characteristics

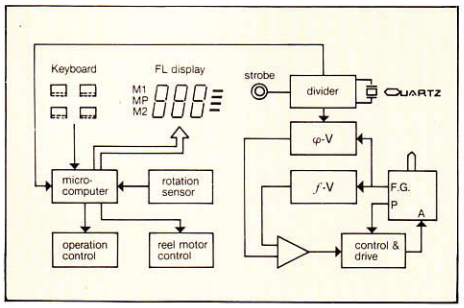


Quartz Phase-Locked Direct-Drive Capstan Motor— Wow & Flutter: 0.03% (WRMS), Speed Deviation: ±0.1%

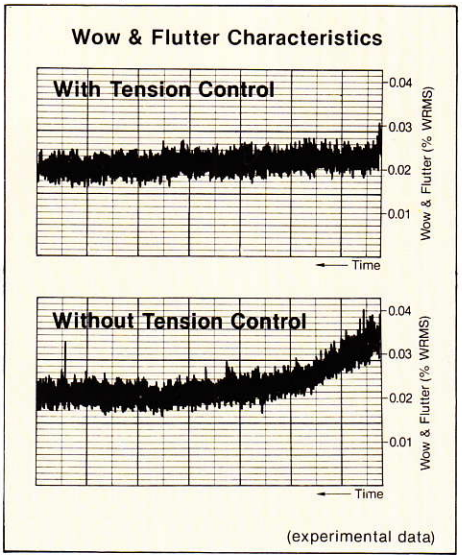
Wow and flutter are the lowest ever in a Technics cassette deck thanks to the combination of our proven quartz phase-locked direct-drive capstan motor and a computer controlled tape tension control system in the reel drive section. As the major determinant of tape travel accuracy, the capstan motor features highly stable, constant rotation. The servo system is based on a quartz oscillator reference frequency and is phase-locked with Technics' famous planar-opposed DC brushless, coreless, slotless, direct-drive motor.



Separate Coreless Reel Motor with Tape Tension Control



The effect of varying tape tension on wow & flutter has received little attention in cassette deck design. But to bring out the full potential of the quartz DD drive system and ensure optimum head contact with the 3-head configuration, Technics has provided the M95 with a remarkable tape tension control circuit. Based on detection of take-up reel rotations and calculation of the diameter of the tape wound on the reel, a microprocessor regulates the reel motor torque to maintain constant tape tension. Extremely high accuracy is achieved because reel rotation detection itself is carried out by counting the number of reel table pulses within a reference period set by the quartz oscillator frequency. A tension arm on the supply reel side provides the back tension needed. At the end of the tape, no more reel pulses are generated and the microprocessor stops tape transport. No strain is placed on either the tape or the transport system.



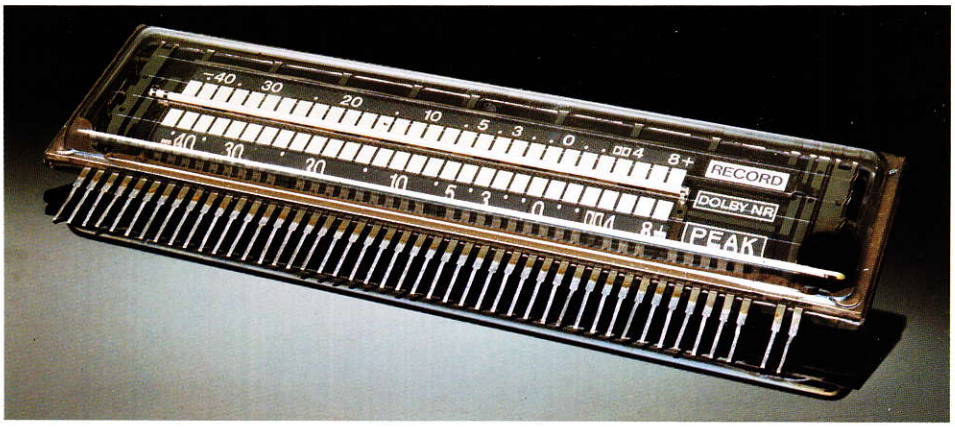
Peak/VU FL Meter with Peak-Hold Capability

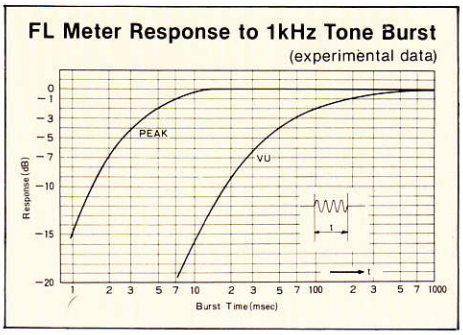
Technics has led the field in employing new FL meters as a more accurate and convenient alternative to needle-type meters. Now in the M95 we've developed professional quality FL meters with an extended indication range of −42dB ∼ +8dB (30 segments: −6dB ∼ +4dB are in 1dB steps; each of the other segments cover 2dB steps; for easier legibility, 0dB and above is a brighter red).

The linear circuit section of the meter unit features a high-slew-factor operational amp for true absolute value wave detection and peak detection. A newly developed IC in the drive circuitry performs A-D conversion and digital memorization.

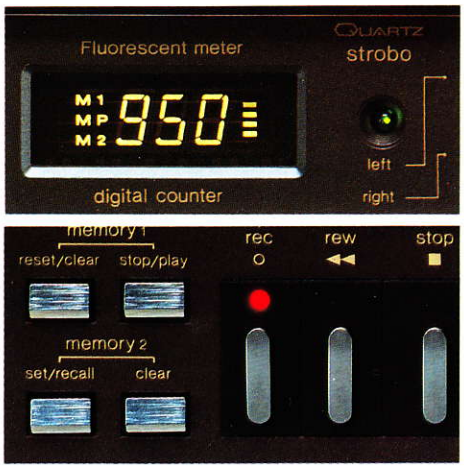
With switchable peak and VU modes it's easy to accurately judge all types of input signals. Plus, the peak-hold mode conveniently indicates the highest transient encountered within an entire musical program, no matter how long.

In the peak mode, attack time is set to match DIN standards. The VU mode exhibits excellent accuracy and the attack and recovery times fulfill ASA standards. To the right side of the meters are RECORD, DOLBY NR, and PEAK indicator bars to let you know at a glance the status of the deck's controls.





Microprocessor Tape Counter and Triple-Mode Memory Functions



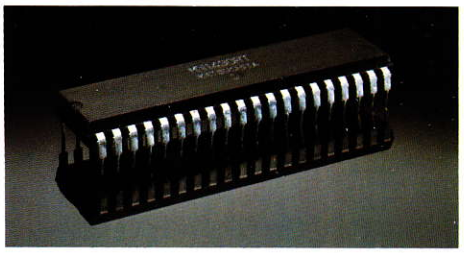
FL Digital Tape Counter

Instead of a conventional mechanical counter, the M95 employs a take-up reel rotation detection device with two Hall IC's which discriminate between forward and reverse for microprocessor calculation of the relative amount of tape wound. This figure is indicated on the FL digital display.

Memory 1 and Memory 2

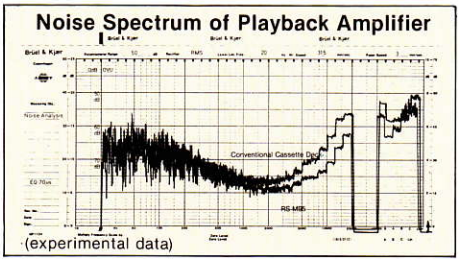
Microprocessor control permits three memory modes: With Memory 1 you can choose between memory-stop or memory-play at the "000" position. The button on the left lets you reset the counter to "000" and also clear the memory. The second button switches the mode from memory-stop to memory-play. The M1 (stop) and MP (play) indicators light to show the mode chosen.

With Memory 2 you can select any spot on the tape for memory-stop operation. The microprocessor stores the particular tape counter figure and stops the tape at that point even if you push the recall button after tape travel has begun. The M2 indicator turns on in this mode. Not only is this handy for finding the beginning of selections, but by using Memory 1 (play) and Memory 2 (stop) together you can repeatedly play a specific section of the tape by merely pressing the rewind button. Furthermore, the microprocessor will stop or play the tape at the chosen position in the rewind, fast-forward, and play modes.



High-Linearity Recording, Playback, and Mic Amplifiers

To take full advantage of the advanced tape transport system and metal tape capability, the M95 employs only stringently selected low-noise components in its outstanding high-linearity amplifier circuits. The playback equalizer amp circuitry features a balanced power supply in a 2-stage direct-coupled configuration without input capacitors, thereby putting it in the DC amp class. In the recording equalizer amp, efficient power usage contributes to extended linearity (+19dB). Furthermore, regulated voltage power supplies for the motors, amps, and IC logic circuits contribute to high reliability.



Double Dolby System* with Recording Level Calibration

Dolby NR system of the M95 consists of two separate encoding circuits for recording, and two separate decoding circuits for playback. Left and right channel recording level adjustment screws are provided for optimum Dolby recording conditions, and the built-in oscillator generates a 400Hz test-tone signal for use in this calibration.

* Dolby is a trademark of Dolby Laboratories.

Other Features

Tape Monitor Switch (tape/source)
With the 3-head configuration, it is possible to monitor both the tape and source while recording. The feather-touch switch features electronic click-noise attenuation and red (source) and green (tape) indicator lamps.

Timer Start Selector (play/off/record)
Since tape transport mode switching is logic controlled, setting this selector alone permits (optional) timer assisted recording and playback.

Record Muting Switch
Makes it easy to cut out sections of a recording or record a no-signal area between selections. The 1.06sec. quartz strobe lamp provides an accurate time reference for using the muting switch.

Feather-Touch Controls
Convenient and reliable feather-touch controls are employed for all switches including the tape transport mode controls.

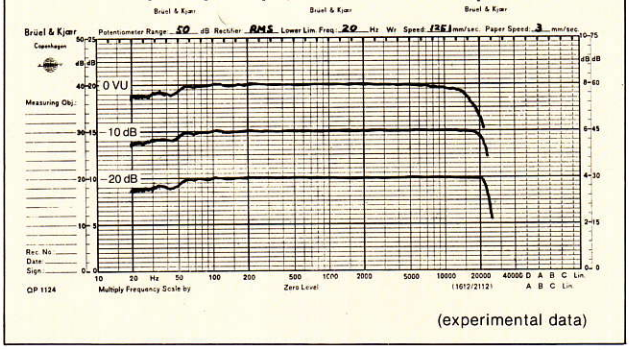
Designed for Standard EIA Rack Mounting
By using the included mounting adaptors, the RS-M95 can be readily adapted to fit standard EIA equipment racks.

- Mic/Line Input Selector with Test-Tone Oscillator Switch
- Input Level Control (L/R)
- Output Level Control
- Mic Inputs (L/R)
- Headphone Jack
- Remote Control Jack for use with RP-9690 or the wireless RP-070; both feature feather-touch controls
- FL Meter Brightness Adjustment Control
- Oil-Damped Cassette Compartment Door
- Illuminated Cassette Compartment

Metal Tape—The Beginning of A New Era in Cassette Recording

High-quality metal tapes are now available from a number of manufacturers, and audiophiles are rapidly discovering the new level of sound quality they provide.
Instead of the metal oxides used in all previously available recording tapes, metal tape employs ultra-fine particles of pure metal (or alloy) in the tape emulsion. Metal tape looks and feels similar to ordinary tape, but its magnetic characteristics are different—both coercivity and retentivity are about twice as high as the best chrome position (γ-Fe_2O_3+Co) formulations. This high coercivity in particular offers greatly improved high frequency response, an area in which ordinary tapes are sorely lacking. To make practical use of this high coercivity, a tape deck must supply approximately double the recording bias current needed for oxide tapes. Furthermore, since coercivity is really a measure of erasing difficulty, new types of erase head must be employed to provide the high erasure current required to erase a signal recorded on metal tape. On the RS-M95, featuring metal-tape recording and playback, you can expect to hear extended frequency response, wide dynamic range, and low distortion performance that goes well beyond cassette decks of the past.

Overall Frequency Response at Different Input Levels



(experimental data)

Technical Specifications

Track System:	4-track 2-channel stereo recording and playback
Tape Speed:	1-7/8 ips (4.8 cm/s)
Wow and Flutter:	0.03% (WRMS)
Frequency Response:	Metal tape; 20—20,000Hz, ±3dB CrO_2/FeCr tape: 20—20,000Hz 20—19,000Hz, ±3dB Normal tape; 20—18,000Hz 20—17,000Hz, ±3dB
Signal-to-Noise Ratio:	Dolby NR in; 70dB (above 5kHz) Dolby NR out; 60dB (signal level = max. recording level, CrO_2/FeCr type tape)
Fast Forward and Rewind Time:	Approx. 80 sec. with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25mV, input impedance 27kΩ, applicable microphone impedance 400Ω—10kΩ LINE; sensitivity 60mV, input impedance 60kΩ
Outputs:	LINE; output level 650mV, output impedance 6kΩ or less, load impedance 22kΩ over HEADPHONE; output level 88mV, load impedance 8Ω
Motors:	2-motor system 1-quartz phase-locked control DC brushless direct-drive motor for capstan drive 1-tape tension controlling DC coreless motor for reel-table drive
Heads:	3-head system 2-HPF heads for record and playback (combination type) 1-Sendust/Ferrite double-gap head for erasure
Bias Frequency:	85kHz
Power Requirements:	AC 120V, 50-60Hz
Dimensions (H×W×D):	5-5/8″ × 17-3/4″ × 13-3/4″ (142 × 450 × 348mm)
Weight:	26 lb. 8 oz. (12kg)
Rack Mounting:	Adaptors for a standard 19″ rack included

Technics

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