

# TEST REPORTS



## Technics RS-DC8 DCC Deck

KEN C. POHLMANN • HAMMER LABORATORIES

**T**he RS-DC8 is Technics' second-generation home DCC deck, providing all the features of earlier decks, a few new ones, and, most significantly, an improved transport. In the analog world, an improved transport can mean better sound, but in the digital world it mainly translates to speedier tape shuttling. The question is, how fast is fast enough?

The RS-DC8's dark gray front panel is quite handsome, with a central door that hinges forward to accept digital or analog cassettes (the former for recording or playback, the latter for playback only). Three LED's on the door indicate a sampling frequency of 32, 44.1, or 48 kHz. A display window on the door lights to show a yellow DCC logo, but blanks during analog playback. The door automatically closes when a cassette is inserted.

The left side of the panel holds a power switch, remote sensor, timer switch, and headphone jack. Three large knobs control headphone level, analog-input recording balance, and

analog-input recording level. A push-button selects Dolby B, C, or off in analog playback. Like all DCC decks, the RS-DC8 is autoreverse, so there is a reverse-mode button for selecting single-play or repeated tape playback. Another button selects the Digital 1, Digital 2, or Analog recording input. And there is a button for selecting automatic or manual marking of track-start points.

A text-mode selection button cycles through the text placed on prerecorded DCC tapes, running sequentially

through album title, artist, and title of the current track. The mode (such as ALBUM TITLE) is flashed in the LCD window on the right side of the front panel, followed momentarily by the encoded information. When the Digital Compact Cassette format was first introduced, its designers said that only prerecorded DCC tapes would carry text information—user-recorded tapes would not. The idea was to increase the perceived value of prerecorded tapes, and it pleased record companies, but not consumers. In light of the fact that both prerecorded and user-recorded MiniDiscs can hold text, the DCC designers have recently changed their mind. Thus, the RS-DC8 can be used to encode as many as four text messages per track on user-recorded tapes, with up to forty characters per message. When playing a user-recorded tape, the text-mode button cycles through four displays labeled TEXT1, TEXT2, TEXT3, and TEXT4, each followed by the corresponding encoded message for the track. Either way, a text-scroll button can be used to scroll messages longer than twelve characters across the display.

The right side of the front panel holds all of the basic tape transport controls, including play, pause, stop, record, tape-direction, fast-forward,

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rewind, and track-skip/TPS (Tape Program Sensor) buttons. When a DCC tape is playing, the track-skip function enables you to jump forward or back to the start of a track, as identified by a track-start marker. When playing analog tapes, you can jump to another track, as identified by the blank intervals separating tracks. In either case, tracks are skipped according to the number of times you hit the skip button, up to a total of ninety-nine. In practice, the feature may malfunction on DCC tapes if markers are written too close together or on analog tapes if the blank interval between tracks is less than 3 seconds long, if low-level music is misdetected as a blank, if the buttons are pressed within 10 seconds after the beginning of the current track or before the beginning of the following track, or if the tape contains fade-ins and fade-outs.

An open/close button is nestled near the door. A counter-mode button cycles the display through total elapsed time, elapsed time in the track, total remaining time, total playing time (prerecorded tapes only), and tape counter; when playing an analog cas-

sette, only the tape counter is available. A counter-reset button sets the tape counter display to zero. When the end-search button is pressed, the deck scans a DCC tape looking for the marker that designates the end of a recorded area—the end of a tape side, for example. This feature is useful when you want to add new recorded material onto the end of an existing recording. With an analog tape, the end-search function looks for a 10- to 30-second blank section and assumes that it has found the end of the recording. An automatic recording-mute button is used to place a 4-second unrecorded segment in the tape; when you hit it, the deck runs for 4 seconds and then enters record-pause mode, but you can get more than 4 seconds by holding the button down.

The deck's display provides various information through alphanumeric and icons. For example, tape side, direction, input mode, reverse mode, Dolby mode, and other status indicators are illuminated as required. A time display shows hours, minutes, and seconds, and an adjacent display shows track time. And, as already not-

ed, these display fields also show scrolled text information stored on DCC tapes. In addition, diagnostic messages such as NO TAPE and COPY PRHBT are flashed when necessary. The bottom of the display is occupied with two horizontal bar-graph meters that show peak playback and recording levels.

**O**n the back panel, three Toslink optical connectors provide two digital inputs and one digital output, and there are two pairs of phono jacks for analog input and output. A detachable AC cord plugs into a receptacle.

As with all consumer digital recorders, the RS-DC8 contains an SCMS (Serial Copy Management System) circuit. It allows the deck to digitally copy from a digital source, but the resulting copy cannot then be copied digitally. In other words, you can digitally connect a CD player to the DCC deck and make a tape copy of the disc, but the SCMS circuit places a copy-inhibit flag in the tape's subcode so that it cannot be copied digitally. Analog copying can be done freely without limit.

The tape transport is mounted on a vibration-damping base and incorporates a single twenty-track thin-film head for all recording and playback operations. As with any audio tape head, cotton swabs should be used periodically (the manufacturer recommends every 10 hours of use) to keep it clean, but demagnetizers should never be used on a DCC head.

The supplied remote control sports no fewer than forty-five buttons, including a keypad that is used both for direct track access and for text entry. It also duplicates most of the front-panel controls, including those for the transport. One nifty trick we've not seen before is track selection by title: With a prerecorded DCC tape, you can enter the title-text mode, hit either of the skip buttons to sequence through the tape's track-title list, then hit the play button. The deck locates the designated track and starts playback. This feature doesn't work on user-recorded tapes, however.

Like other DCC decks, the RS-DC8 generates five different editing mark-

## MEASUREMENTS

Record/playback measurements were made through the analog inputs, playback measurements at the analog outputs. Measurements listed are for the worse of the two channels.

### TRANSPORT

Fast-wind time (C-90/DCC-90)	70 seconds
Speed error	
analog	-0.29%
digital	below measurable limits
Wow-and-flutter (IEC peak-weighted)	
analog	0.13%
digital	below measurable limits
Line input for indicated 0 dB	360 mV
Line output for indicated 0 dB	2.1 volts

### DIGITAL PLAYBACK

Frequency response	
16 Hz to 20 kHz +0, -0.11 dB	
Channel separation	
1 kHz	92.2 dB
10 kHz	88.7 dB
Signal-to-noise ratio (A-wtd.)	95.7 dB

Distortion (THD+N at 1 kHz)	0.0069%
Linearity error (at -90 dB)	+1.3 dB

### DIGITAL RECORD/PLAYBACK

Frequency response	
16 Hz to 20 kHz +0, -0.12 dB	
Channel separation	
1 kHz	82.0 dB
10 kHz	81.7 dB
Signal-to-noise ratio (A-wtd.)	88.8 dB
Distortion (THD+N at 1 kHz)	0.0074 %
Linearity error (at -90 dB)	-1.1 dB

### ANALOG PLAYBACK

Frequency response	
32 Hz to 18 kHz +3.8, -1.5 dB	
Channel separation	
1 kHz	55.2 dB
10 kHz	43.6 dB
Signal-to-noise ratio (A-wtd.)	
no noise reduction	56.8 dB
Dolby B	64.1 dB
Dolby C	71.8 dB
Distortion (THD+N at 1 kHz)	2.8%

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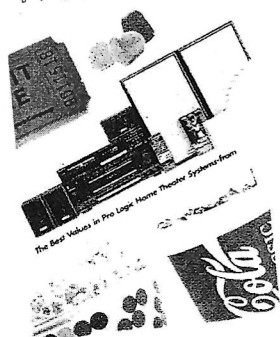
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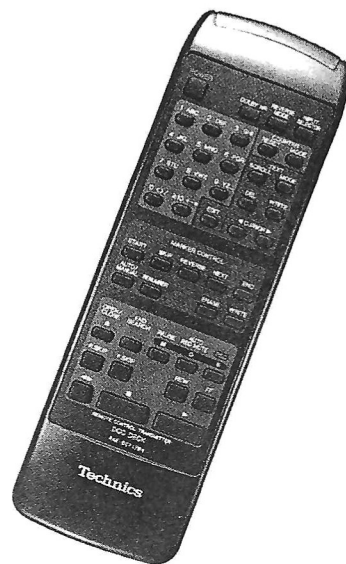
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ers. These markers are written to user-recorded DCC tapes to facilitate tape control. Based on a rather complicated logic, some markers are written when the automatic writing feature is engaged and some are not. In addition, some markers can be manually written during recording, but all markers can be manually written after recording. You cannot add markers to a prerecorded DCC tape, however. The Start marker identifies the beginning of a track so that tracks can be located with the Skip buttons. The Skip marker is used to identify the beginning of unwanted material that you want to skip after a recording is finished. The End marker marks the end of a recording. The Reverse marker instructs the player to reverse direction and begin playing the other tape side. The Next marker tells the player to fast-forward to the end of a side, then reverse direction and begin playing from the beginning of the other side. All markers are controlled from the remote via dedicated buttons. You can also use the remote to erase markers and renumber tracks.

The RS-DC8 performed well on the test bench and provided an interesting comparison with earlier DCC decks. Its tape transport was significantly faster than those used in first-generation models. The fast-wind time for a C-90 was 70 seconds, compared with 140 seconds on the earlier RS-DC10 (reviewed in February 1993). Speed error and flutter in analog mode have also been reduced, and both measurements represent very good performance. Electronic performance was slightly below that of the RS-DC10 we tested (mainly a matter of a few decibels in the signal-to-noise measurements), but not significantly; overall we would characterize it as very good to excellent on the digital side and good on the analog.

I spent a weekend toying with the RS-DC8, listening to it and trying its various features. First and foremost, I checked out a number of transport benchmarks. I loaded and rewound a prerecorded tape (REM's "Out of Time") and pressed the play button. The deck's transport automatically en-



gaged four different times, read the lead-in area, forwarded to the start of Track 1, played the countdown area, and at last started to play the music; total time to begin playing, 30 seconds.

Using the same tape (a 44-minute recording with eleven tracks), I selected Track 11 while playing Track 1. The RS-DC8 obediently fast-forwarded to the end of the tape, rewound back, located Track 11, and started playing; total time, 1 minute, 20 seconds. When I selected tracks via title search, the deck worked smarter and faster. From stop I entered the text-title mode, used the skip buttons to find the title of Track 11, and hit play; the deck changed tape sides and located the track within 20 seconds. Alternatively, I could manually change tape directions, then skip to the start of Track 11, which also took about 20 seconds.

Finally, I tested the time to find a desired track that was merely further down the same side of the tape, requesting Track 5 while playing Track 1. Shuttle time was 35 seconds.

The RS-DC8's double-speed transport does improve access time relative to that of earlier DCC decks, but clearly tape is not a random-access medium, so DCC access times are never going to approach those of CD. On the other hand, the new transport is indeed quick for a cassette deck.

I also played with the text-writing feature. The process proved workable, but tedious, because the deck goes through an automatic routine in which the transport engages six times before writing and three times after writing to perform its editing chores across the

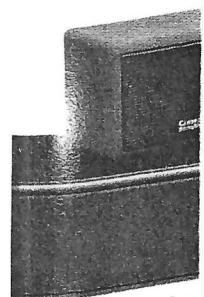
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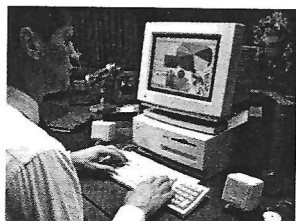
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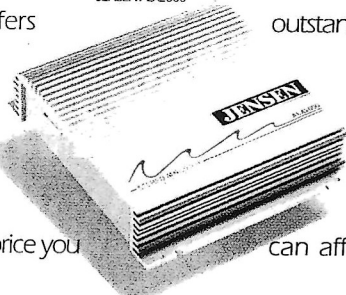
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tape segment. Unlike the text data on a prerecorded DCC, which is written throughout the length of the tape in the subcodes, user-text information is written only at the start of each track, and the text for each track is treated separately. If you want the album title in the text for every track, for example, you have to enter it manually at the start of each track on the album. Also, unless you play through the beginning of the track where the text is located, the deck misses the information and you're out of luck—nothing is displayed. Still, despite its inconveniences, I am glad this feature has been made available.

Ultimately, at least for some of us, it is sound quality that matters above all else. I spent hours listening to my small collection of prerecorded DCC tapes, some I had previously recorded, and some new recordings. Throughout, I was again impressed by the sound quality of DCC's PASC data-reduction algorithm. I've talked to a few people who claim they can hear artifacts in DCC recordings, but they have never volunteered to demonstrate their acuity to me. In my opinion, the audible difference between a CD and a digital-input DCC copy of it is negligible to nonexistent. If anything, I suspect that if a linear 16-bit recording and a DCC recording were made of a live musical event, the DCC version might sound better. Some might consider that a radical statement, given that the linear recording would be, within its limits, a more literal representation, but it reflects my confidence in the integrity of the PASC psychoacoustic coding system. As for analog cassette playback, I was fully satisfied with sound quality; the RS-DC8 actually sounded better in that mode than many conventional cassette decks.

In terms of functionality, the RS-DC8 is clearly a step forward for DCC. With the faster transport, many people undoubtedly will consider the short delays in finding and playing music selections acceptable. Others, accustomed now to CD and impatient with delay, will probably still find the search lags interminable.

In short, the RS-DC8 meets its designer's goals: It is an audio recorder with the convenience of cassettes and the sound quality of CD. It thus succeeds as a worthy replacement for the compact cassette, the only question being, at this point, whether what people want is an improved cassette or something else entirely. □

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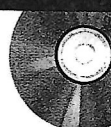
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