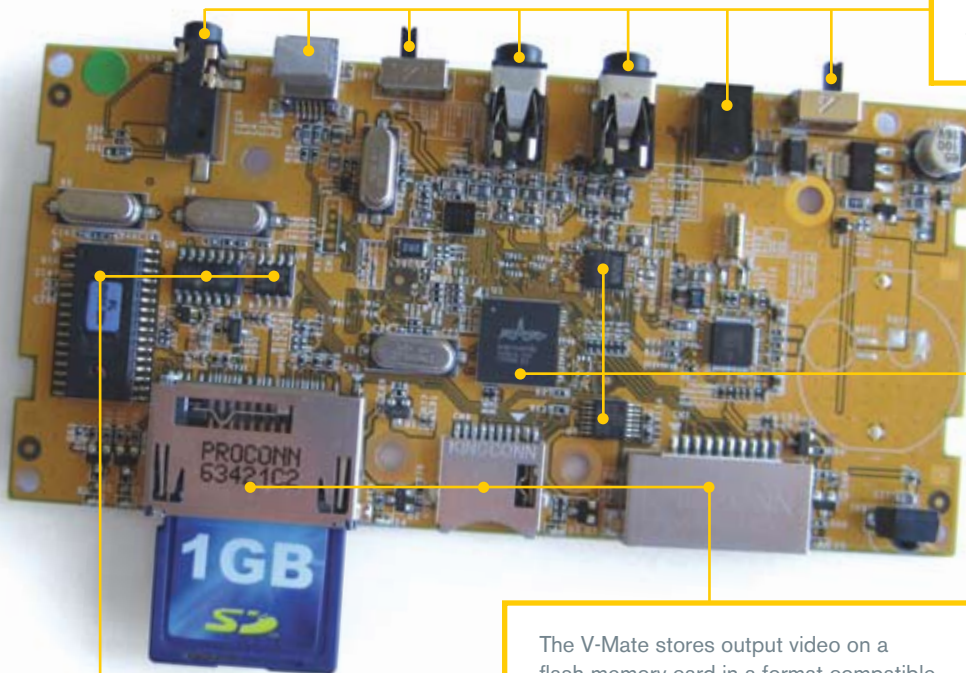




SanDisk V-Mate video-memory-card recorder

SanDisk's V-Mate video flash-memory-card recorder records video to flash cards from TV, cable, and satellite set-top boxes, and DVD or VCR players, to play back on mobile phones, PDAs, handheld game consoles, and video/music players. A remote-control- and TV-based graphical user interface let users control settings and recordings and access content. It has multiple programming slots for entering channel, date, and start/stop times to schedule recordings. At initial setup, users select their playback device, such as a mobile phone or handheld game, to ensure that the recordings are playback-compatible. Recording time is approximately 3.6 hours in a mobile phone at a bit rate of 544 kbps and 1.8 hours on a notebook computer at 1.056 kbps. The V-Mate measures 5.1×2.6×0.8 in. and costs \$80 to \$120.

The V-Mate connects in the analog-signal line between the set-top box and the TV using component-video and -audio connectors. The device comes with two cables that combine the three-component signal lines into a single 3.5-mm connector to match the small V-Mate panel space. It also comes with an infrared emitter and cable to send commands to the set-top box. The V-Mate includes only a power switch and a switch to select PAL (phase-alternating-line) or NTSC (National Television System Committee) format.



The V-Mate employs a number of integrated devices for the mobile market, resulting in a small, low-power unit. The Broadcom BCM2724 and support chips form the heart of the unit and feature MPEG-4 VGA or H.264 CIF (common-intermediate-format) video encoding/decoding at 30 frames/sec, plus TV output. The BCM2724 integrates 64 Mbits of embedded SDRAM with the Broadcom VideoCore multimedia processor, enabling software implementation of the full range of multimedia codecs. In the same board area, the Wolfson Microelectronics WM8960 low-power stereo codec integrates a microphone interface and a stereo-headphone driver. Targeting portable digital-audio applications, the device provides on-chip digital-signal processing for automatic level control for the line input.

The V-Mate stores output video on a flash-memory card in a format compatible with the user's mobile device. SanDisk's Web site lists more than 140 compatible portable devices, including PDAs; several versions of the Apple iPod; and cell-phone models from Motorola, LG, Nokia, Palm, Samsung, BlackBerry, Siemens, and Sony Ericsson. Some devices, such as the Apple iPod, without a plug-in flash-memory card, require an extra memory-copy step. The device supports SD (secure digital), MMC (multimedia card), MMCplus MMCmobile, SDHC (secure digital high capacity), MiniSDHC, MicroSDHC, Memory Stick Pro, Memory Stick Duo, and Memory Stick Pro Duo.

The operator interface is through the remote control and TV screen. The user can select the transcoding format and set up recording schedules by following on-screen prompts. The device implements the infrared interface section with an 8-bit MDT10P55 micro-controller from MDT, an AT24C01 serial EEPROM from Atmel, and infrared codes from Universal Electronics. The unit also includes an infrared emitter that automatically turns on the cable-, satellite-, or terrestrial-TV tuner box and selects the channel.