

The Dimage X50 digital camera

The Dimage X50 digital camera is a recent model in Konica Minolta's Dimage X series. The X60 is identical except for the lack of a view finder and a larger LCD. The utility of a view finder became apparent in this model after the magnetic latch on the Minolta factory case cracked the LCD. The view finder allowed you to use the camera until you could find a parts camera on eBay for \$32.

Like autos and most other consumer appliances, this camera is obviously designed from the outside in. A stylist designed the case; mechanical engineers made all kinds of boards, panels, and injection moldings. Then, the electrical engineers had to fit things onto the boards. It would be interesting to see Minolta redesign the camera from an electrical engineer's perspective, with all the electronics on one board and the developers designing buttons, microphones, and speakers to support this simplification.

The flash board plugs into the main board and holds pushbuttons on the top of the case. It carries a small lithium button cell to power the date and clock functions and to maintain the settings even during a battery change.

The main board holds the bulk of the electronics. Most of the components are on the underside, which is covered with a white silk-screen to protect the device from shorting against the optical-lens assembly. Several inductors and power components are on this side of the board.

A ribbon cable that carries signals for two focus motors and two position-flag sensors connects the 3× optical-zoom-lens assembly. Four terminals on the two focus motors indicate that they are stepper-type motors. In addition, there are four circuits for an aperture motor. The view finder assembly (not shown) screws to the top of this unit—a combination of plastic and metal sheets as well as several metal rods on which the lenses slide.

The microphone plugs into the main board and resides in a pocket molded in a complex plastic carrier.

The front cover carries a slide switch that connects to the main board with a ribbon cable, providing one of the camera's most endearing functions: You don't have to poke a tiny button to turn the camera on; just slide the 1×2-in. cover off the lens, and the camera is ready. There are two clear acrylic windows in the cover—one for the flash and one for the view finder. The black area is tape that prevents shorting the battery to the metal case.

The CCD board, with a metal mounting plate that ensures its location precisely in the optical path, plugs into the main board. It includes a short ribbon cable to a board, which holds the interface connector that plugs into the main board.

Pigtail connectors attach the battery-terminal board to the main board. The terminal board also carries the external dc-power connector. The terminals are inside a plastic housing that fits into the plastic carrier in the camera.

Rear-panel pushbuttons mount on the LCD metal-panel assembly. The stiffness of the metal panel improves the snap-action feel of the buttons.

The LCD mounts on a metal panel that straddles the components on the underside of the main board. The panel itself has a metal back, which is useful to prevent EMI (electromagnetic interference) from radiating through the LCD glass. The ribbon cable uses the same differential signaling as notebook-computer-LCD screens.

