

+ Visit www.edn.com/070215pry for a more in-depth description and additional photos of our deconstruction of the Spaceship Blaster—as well as three other cereal-box toys.

See inside a cereal surprise

Microsoft continues to deny rumors of a handheld Xbox game console, but the company did recently promote its Xbox brand by including a series of Mini Games in boxes of Kellogg's cereals. How did the designers deliver a compelling user experience when their end product had to be inexpensive enough to give away in a box of Froot Loops or Frosted Flakes?



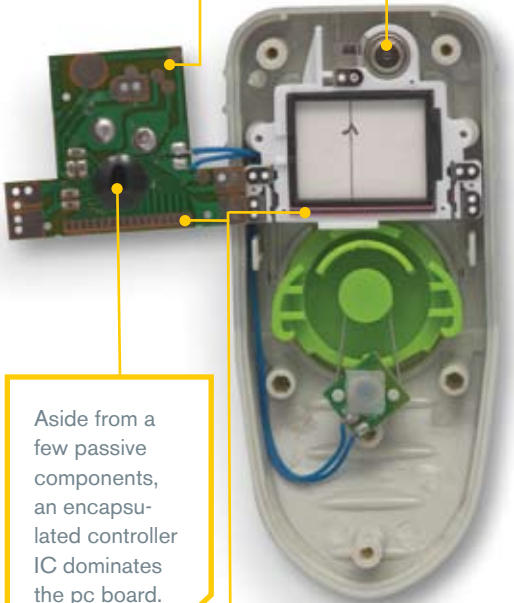
The power switch and front-panel knob connect to the single-layer pc board through proximity-improvised contacts, preserved by six tiny screws. The membrane switch tethers to the board using a more conventional wire-and-solder approach.

The on/off switch is crude but effective, as are the dual contacts on either side of the control knob, which sense clockwise and counterclockwise twists. A tension wire returns the knob to its neutral position after release.

Two spring-loaded contacts press against and electrically stimulate the low-fidelity speaker.

A membrane switch communicates that the user has activated a button on the back of the game.

Although the designers expect users to discard the Spaceship Blaster game once its battery gets depleted, intrepid tinkers can replace the power source if they can get past the non standard screws holding the case together.



Aside from a few passive components, an encapsulated controller IC dominates the pc board.

Display-driver contacts lining the bottom edge of the board mate to the low-resolution monochrome LCD, beneath the reflective backing cover shown, using a "zebra strip"—an elastomer that embeds alternating bands of conductive and insulating material.

