



Ambient Dashboard

Background

Ambient Devices builds products that display useful frequently-updated information such as the weather, stock market performance and sports scores in ways that are intuitive and easy to use. Ambient Devices products gather data from the pager network, allowing them to operate at extremely low power and without having to be connected to a computer network.

The Ambient Dashboard uses three VU meter-like displays to show the status of a wide variety of information. Its three slots are configurable by putting in any of 30 clear plastic FaceCards that ship with the product. Each FaceCard has eight small cutouts that are read by the Dashboard to set what information should be displayed.

The Ambient Dashboard runs for months off two standard AA-batteries. An optional power supply allows the system to operate off of AC power.

System Overview

Bolton Engineering worked with Ambient Devices to integrate the mechanical and industrial design. The switches to read the FaceCard were implemented with small beryllium spring contacts that were inserted and soldered as a group before a small sacrificial bar was broken off. The product was implemented for low-cost Far East assembly using very low-cost discrete devices rather than more expensive integrated ICs.

- Anti-reversal input protection circuit protects against improper battery insertion.
- Three full-bridge stepper motor drives, constructed out of low-cost discrete MOSFETs and LVTTTL logic
- Includes Console serial debug port, for system debug and manufacturing test.
- Incorporates interface to standard pager module.
- Designed for extremely low standby current.

Project Scope

Bolton Engineering designed the schematics and circuit board, wrote driver software, worked with Ambient and a design firm to define the physical requirements, fabricated and debugged the hardware. Ambient Devices was responsible for the application and communication firmware. The project was completed in under ten weeks, on schedule for a company demonstration. The first-pass boards performed all required functions and required only minor design changes.