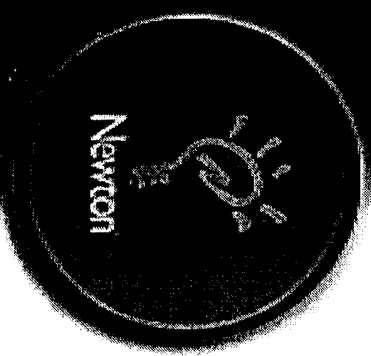


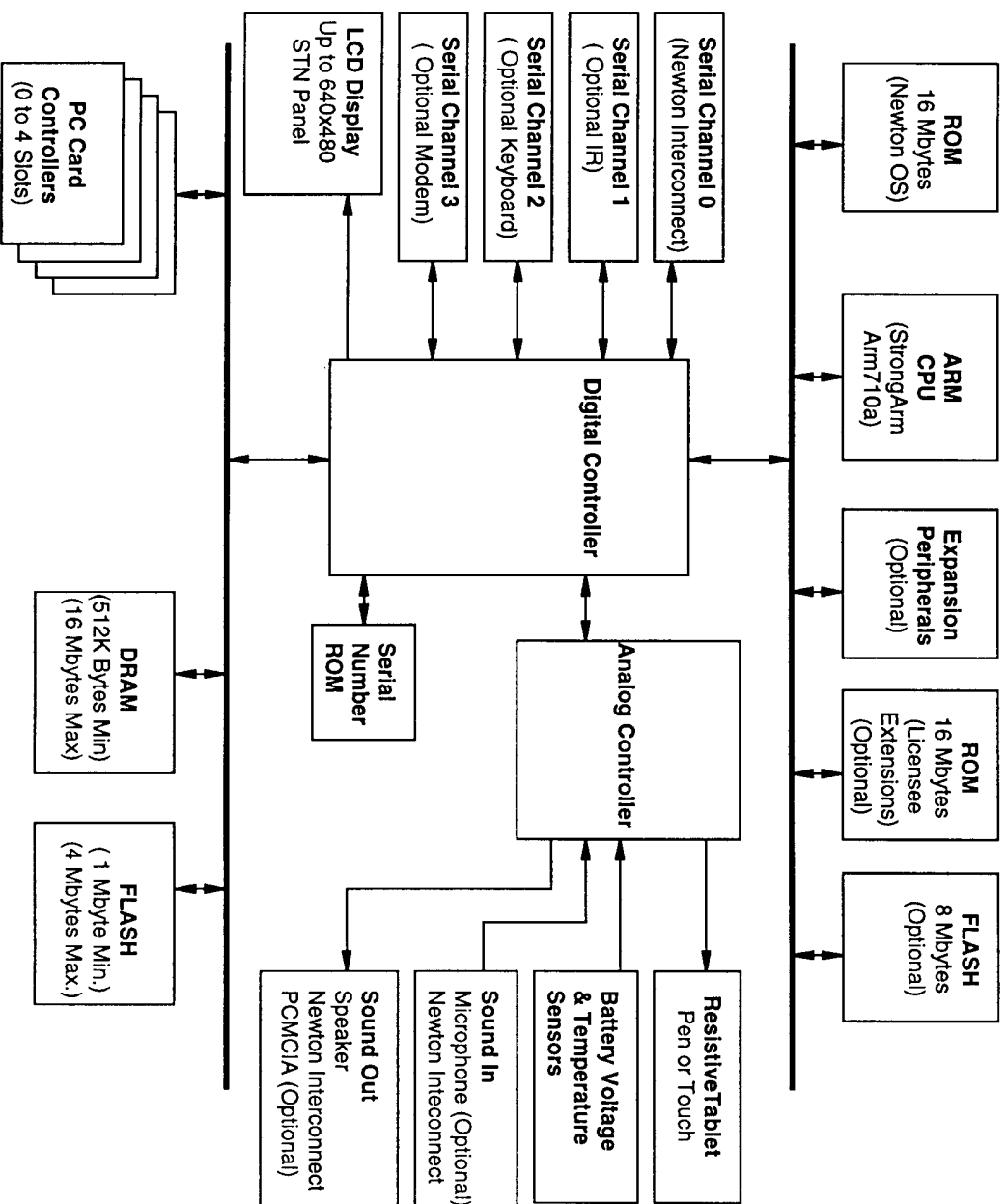
Newton Hardware

Joe Tate
Newton Licensing Support

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Generic Hardware Block Diagram



Newton

Digital Controller Subsystems

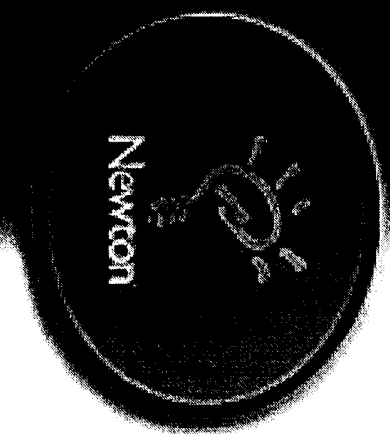
- CPU Interface
- Memory Control
- Interrupt Control
- DMA Control
- 4 Serial ports
- Power Management
- LCD Controller
- GPIO Subsystem
- High Speed 32 bit External I/O Bus



Newton

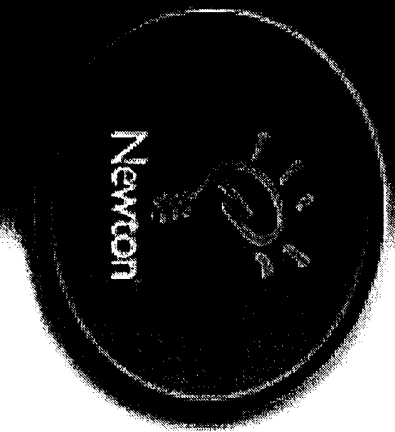
Serial Ports

- **Channel 0 (Newton Interconnect, Internal Serial Slot)**
 - AppleTalk, Async, SDLC Modes
 - Data Rates to 230.4 Kbps
- **Channel 1 (Optional IR)**
 - NRZ, OOK, TV-IR, IRDA Modes
 - Data Rates to 115.2 Kbits/sec



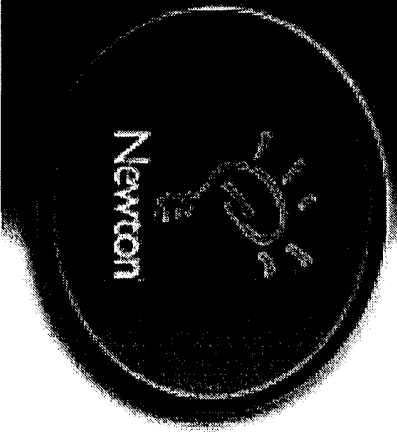
Serial Ports (cont.)

- Channel 2 (Optional Keyboard, Internal Serial Slot)
 - NRZ
 - Data Rates to 19.2Kbits/sec
- Channel 3 (Modem External Devices, Internal Serial Slot)
 - NRZ
 - 38.4Kbits/sec



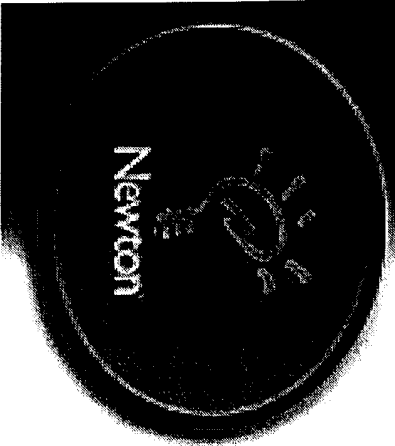
Analog Controller Subsystems

- Battery Measurement
- Audio Subsystem
- Tablet Subsystem
- 6 General Purpose Digital I/O Signals
- 2 Channel Audio Input



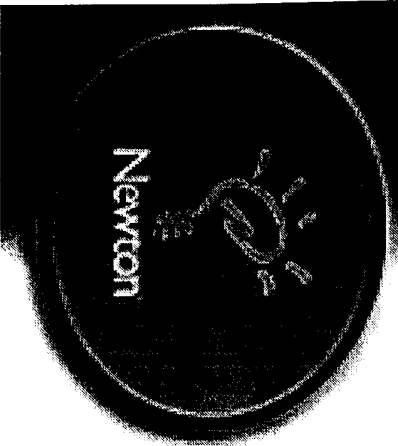
Hardware Modules

- LCD/Tablet Module
- Main Logic Board (MLB)
- ROM Simm



LCD/Tablet Module

- Single Scan, transreflective LCD
- 480x320 (1/2 VGA) Resolution
- 130.8mm x 89.2mm Physical Active Area
- 0.26mm x 0.26mm Dot Pitch
- 0.24mm x 0.24mm Dot Size
- EL Momentary Backlight
- Anti-Glare Resistive Tablet
 - Glass with polyester overlay



MILB Components

- StrongARM CPU (160Mhz or 100 Mhz)
- Cirrus Logic Voyager Chipset
 - Digital Controller
 - Analog Controller
 - IR Transceiver
 - 2 PCMCIA Controllers
- 1 or 4 Mbytes of DRAM
- 2 or 4 Mbytes of Flash
- Power Supplies



NeXT

ROM Simm

- 8 Mbytes of ROM for OS
- support for 8 Mbytes of Licensee ROM
- Support for 8Mbytes of Additional FLASH

The Newton logo is a circular emblem. Inside the circle, there is a stylized drawing of a hand holding a pen, with the word "Newton" written in a serif font below the drawing.

Newton

Available MILB Power Supplies

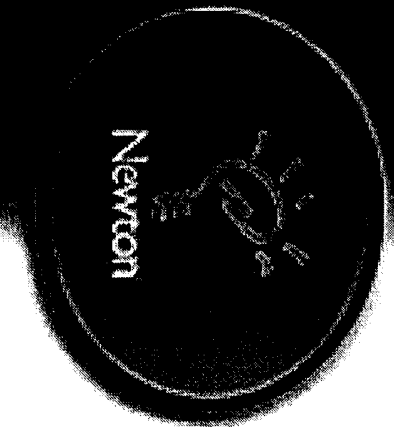
- **3.3 Volt, 1.1 W available**
Rom Simm, Internal Serial Slot,
PCMCIA
- **5 Volt, 2.5 W available**
Rom Simm, Internal Serial Slot,
PCMCIA
- **12 Volt 1.4 W available**
Rom Simm, Internal Serial Slot,
PCMCIA



Newton

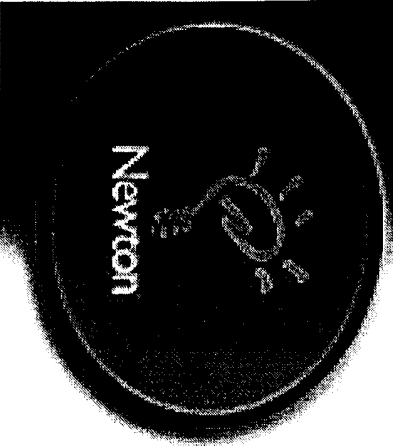
Power Sources

- **7.3Volt, 1.2 A External Input Jack**
- **4 Cell Battery Connections (A or AA)**
 - **Alkaline or NiMH Batteries**
- **Internal Serial Slot**
- **External Newton Interconnect**



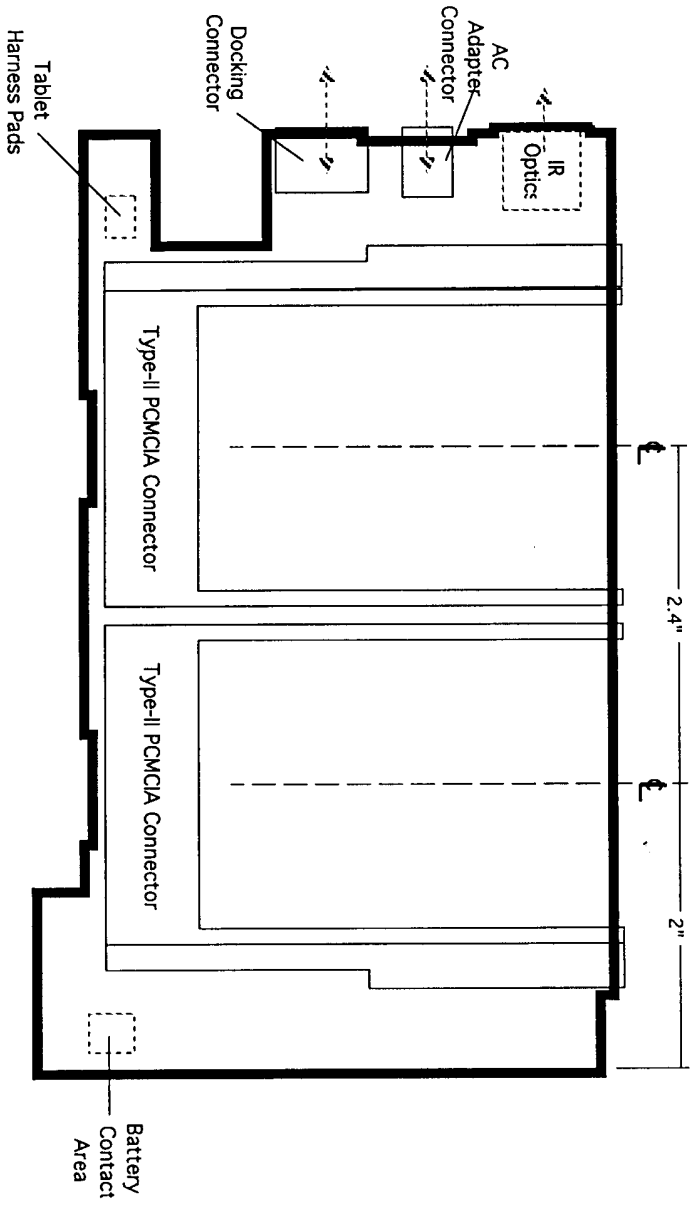
Battery Life (AA Cells)

- Alkaline
 - 35 Hours Run Mode
 - 117 Hours Idle Mode
 - 75 Hours Mixed (80% Idle)
- NiMH
 - 20 Hours Run Mode
 - 48 Hours Idle
 - 35 Hours Mixed (80% Idle)

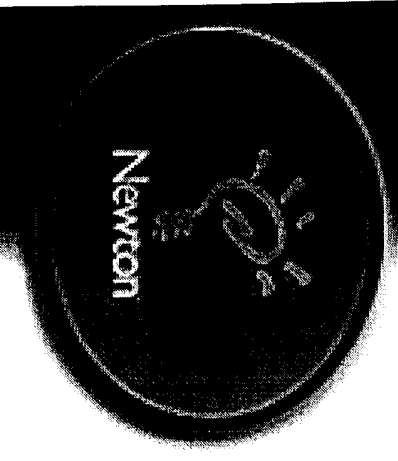


MLB Side A

Side A MLB Outline

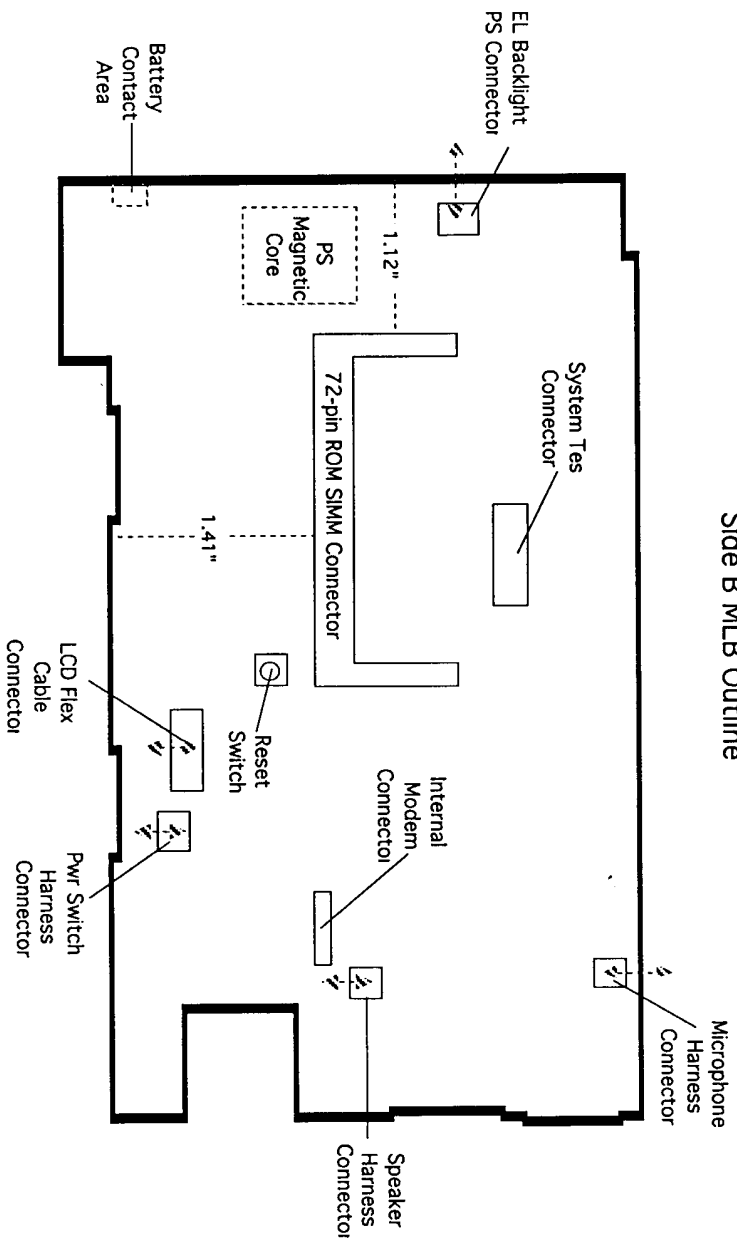


Side B
- Two Type-II PCMCIA connectors, power jack, IR optics, PS circuitry



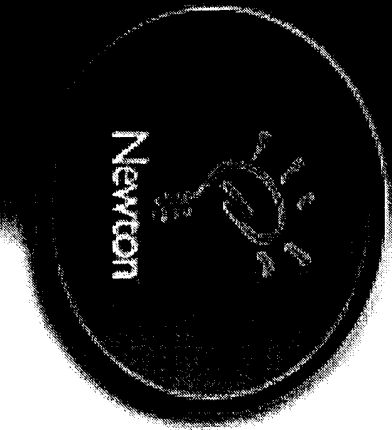
MLB Side B

Side B MLB Outline



Side A

- Most of the digital ICs and misc components, ROM SIMM connector, tall power supply magnetics



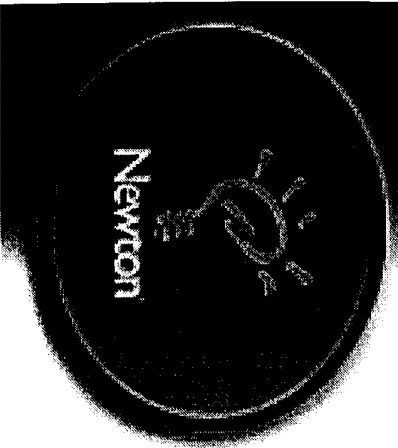
External Newton Interconnect

- 26 Pin SMD Custom Header
- Power In
- Power Out
- Serial Channel 0 (RS-422 Levels)
- Audio In /Out (1K Ohm Load)
- 3.3 Volt/5 Volt Supply
- Docking Signal



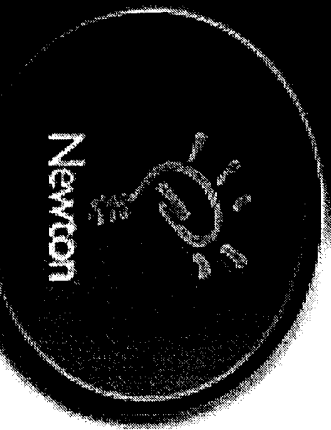
External 2 PCMCIA Slots

- Type I or Type II PCMCIA Cards
- 2.1 PC Card Compliant



Internal Serial Slot

- **32 Pin SMD Header**
- **Serial Channel 0 (CMOS Levels)**
- **Serial Channel 2 (CMOS Levels)**
- **Serial Channel 3 (CMOS Levels)**
- **Sound In**
- **Unfused Battery**
- **Power In (Charging Capabilities)**
- **General Purpose I/O**



Internal ROM Slot

- 72 Pin Mini Memory Connector
- Address Bus
- 32 Bit data Bus
- 2 ChipSelects
- Ready Signal
- Interrupt Signal
- 3.68Mhz Clock

The Newton logo is a circular emblem containing a stylized drawing of a hand holding a pen, with the word "Newton" written in a serif font below the drawing.

Newton

Internal LCD Connector

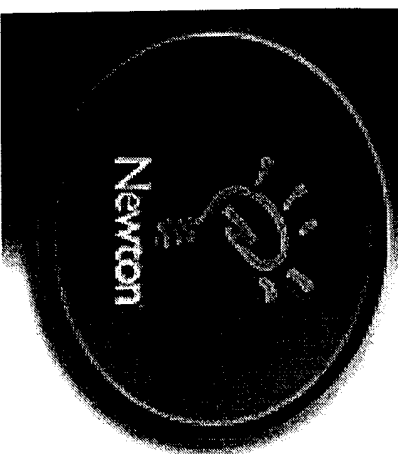
- **20 Pin Pressure Flex Connector**
- **8 Bit Data**
- **LCD Clocks**
- **Power Supply**



Newton

Internal Tablet Connector

- 4 gold plated pads
- Pressure fit



Internal Battery Connector

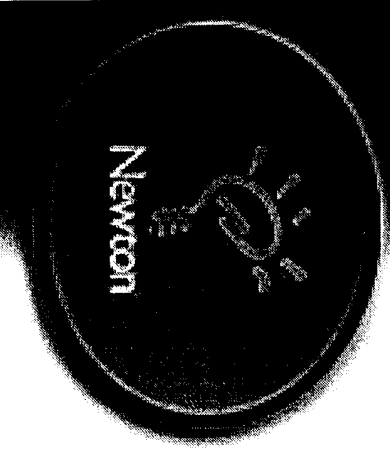
- 3 Through holes (two Pos, 1 Neg)
- 2 Gold Plated Pads
 - Temperature Sense
 - Type Sense



Newton

Various Other Internal Connections

- EL Panel
- Microphone
- Speaker
- On/Off Switch



Development Notes

- **Documentation**
 - **Architecture Overview**
 - **Designer's Guidelines**
- **ROM Simm Designer's Guide**
- **Internal Serial Slot Designer's Guide**
- **Newton Interconnect Designer's Guide**
- **Main Logic Board Customization Designer's Guide**
- **Battery Supply Designer's Guide**

