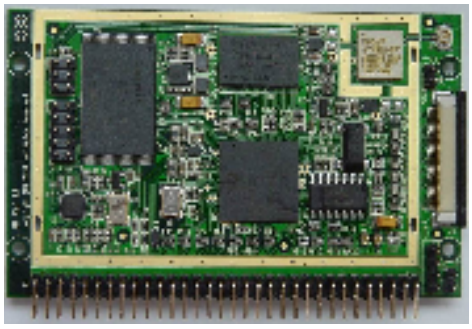
Key Feature	Benefit
Turnkey solution	Production-ready SBC with streaming and local playback applications bundled in a GUI based Embedded Linux
Rich peripherals	MMI (man machine interface), network communication, storage and system expansion
Compact size	Easily integrated into most systems like mini-compo, Hi-Fi equipment
Master and slave modes	Simplifies design
Custom design support	Custom board design and corresponding driver porting available



NS100 is a total solution for Internet audio streaming and local audio playback that enables audio product manufacturers to design and launch to market a complete Internet radio with music player in the shortest possible time. With all the essential functions like media processing and networking contained in the module, a complete Internet radio music player can be assembled with the addition of a power/audio/interface board, a key board, a display board and the case enclosure. Audio manufacturers can concentrate on the work they do best - industrial design and marketing to add the most value, instead of hassling over electronics and firmware design.

Both wired Ethernet and Wifi wireless LAN technologies are supported. Advanced WPA and WPA2 wifi security are employed for maximum network safety. An embedded server allows users easy programming of favorite station URLs through a connected PC, in addition to the on-the-fly programming utility. Unlike other solutions, NS100 is GUI based, making operation intuitive and easy for even the computer illiterate. Firmware upgrade through Internet ensures the Internet radio software is always up to date. In addition to local networking through a broadband connection, NS100 has the USB host interface to connect to Internet with a 3G wireless modem, delivering the Internet radio and on-demand audio services anywhere the user goes. Measuring just 75x47 mm, NS100 can be incorporated easily as a slave device in most of the audio equipments to add the Internet streaming and digital playback to the equipments, broadening the sales appeal instantly.

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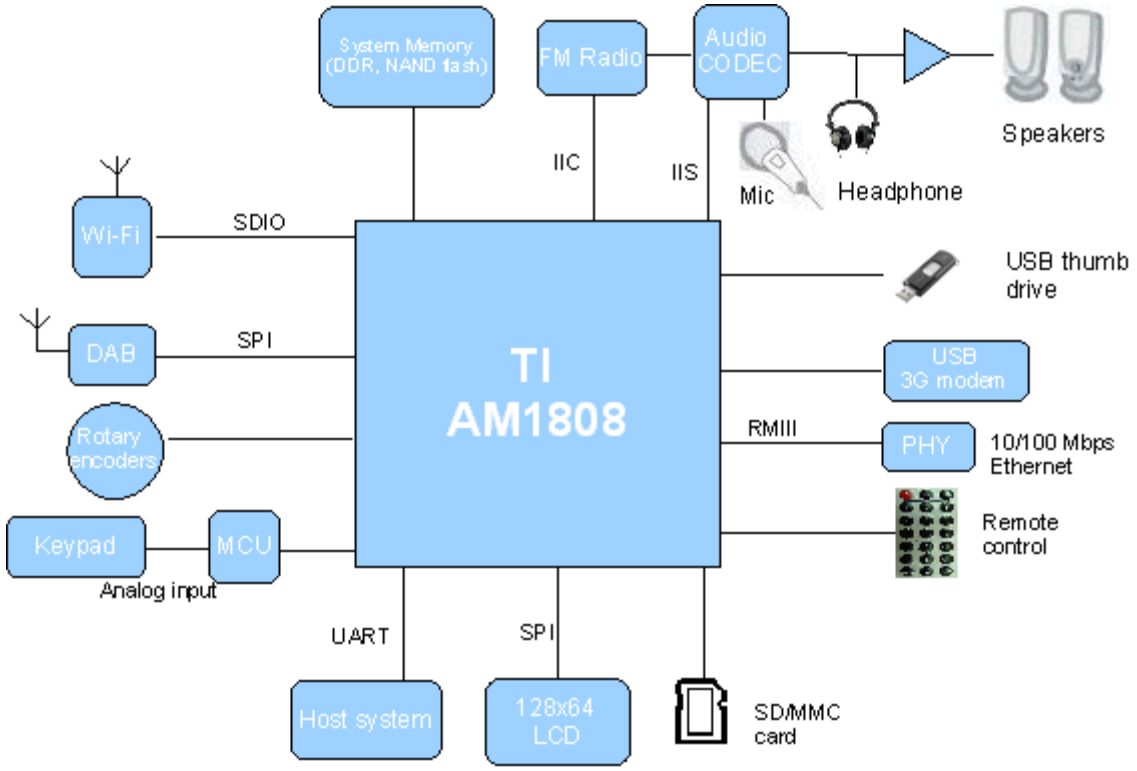

Figure 1 System Diagram

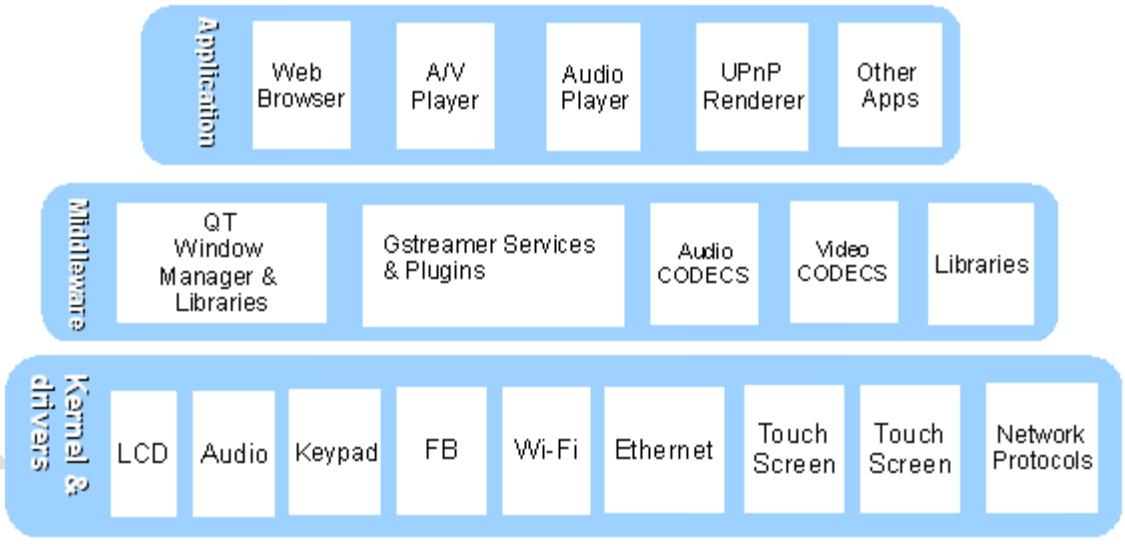

Figure 2 Software Architecture

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Internet Audio Streaming Solution

Hardware Features

Processor

- TI AM1808 running at 400 Mhz

System Memory

- 64 MB DDR2 SDRAM (optional 128 MB)
- 1 GB MLC NAND flash (optional 2/4 GB)

Audio CODEC

- TI TLV320AIC3104 **(resides on external interface board)**
- Headphone out
- Mic-in for audio recording
- Line-out

Display

- 128x64 graphic mode LCD
- dimmable backlight LED

Networking

- IEEE 802.11 b/g Wi-Fi
- 10/100 Mbps Ethernet

USB and External Memory Interfaces

- USB 2.0 OTG and USB 1.1 host
- SD HC up to 32 GB

DAB and FM radio

- SPI interface for DAB+/DAB radio (coming soon)
- IIC interface for FM radio (optional RDS)

Radio Recording

- Recording of digital Internet radio and analog FM radio

Misc Interfaces

- Ambient light sensor
- Remote control (industry standard NEC code)

Software Features

Media Player

- Gstreamer based media player (stream and local playback)

Audio Formats and Music Player

- MP3, WMA, OGG, AAC, FLAC, WAV, AIFF
- Fixed and variable bit rate
- Embedded memory, SD card and USB thumb drive
- Playlist and folder support

Wireless

- Security encryption: WEP, WPA and WPA2
- Wi-Fi network survey (SSID scanning) and selection
- One-entry password authentication

Networking and Streaming Protocols

- Industry standard TCP/IP, DHCP, NTP
- HTTP, MMS and RTSP streaming format support

Music Sharing

- UPnP Media Server Control Point and Media Renderer

Radio Station Listing

- Over 12,000 stations worldwide from portal
- 255 preset stations under 10 user defined groups

Optional Enhanced Music Services

- Podcast and on-demand streaming
- Integration support for third party services like Real Rhapsody

Alarm Clock and Sleep Timer

- Dual alarms with snooze (wake-to-radio)
- Sleep timer

Firmware Update

- Remote update through Internet without a connected PC

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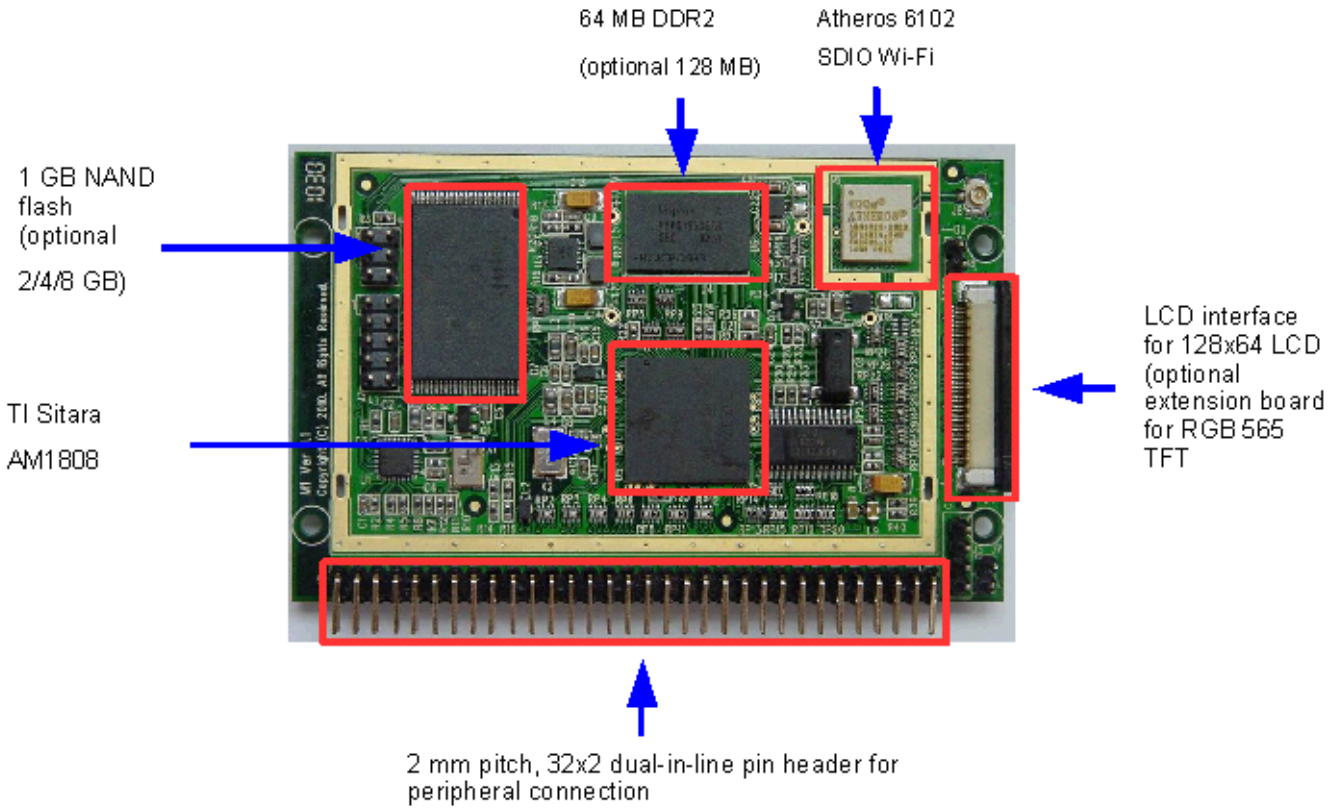

M1 System Interface Dual-in-line Pin Header

A	B		A	B	
+3.3V_STANDBY	GND	1	HARD_MUTE#	SPI_DAB_MISO	17
+3.3V_MAIN	+3.3V_MAIN	2	SPI_DAB_CLK	SPI_DAB_MOSI	18
BAT_LEVEL	SYSTEM_ON#	3	SPI_DAB_IRQ	SPI_DAB_RST#	19
RESET_BUTTON#	KEY_ON#	4	SPI_DAB_CS#	I2S_BCLK	20
ROT1-A	ROT1-B	5	I2S_LRCLK	I2S_DO	21
ROT0-A	ROT0-B	6	I2S_DI	FM_SEL	22
IR_REMOTE	ADC_KEY0	7	HOST_I2C_SCL	HOST_I2C_SDA	23
ADC_KEY1	ADC_KEY2	8	GND	GND	24
ADC_KEY3	AMB_LIGHT	9	USBOTG_VBUS	USBOTG_DRVBUS	25
GND	GND	10	USB_OTG_DP	USBOTG_DM	26
SD_D2	SD_D3	11	USB11_DP	USBOTG_ID	27
SD_CMD	SD_CLK	12	LAN_LED2+	USB11_DM	28
SD_D0	SD_D1	13	LAN_RXN	LAN_LED1+	29
GND	GND	14	LAN_CT	LAN_RXP	30
SD_CD#	SYS_RESET#	15	LAN_TXP	LAN_TXN	31
SLAVE_SCL/RXD	SLAVE_SDA/TXD	16	GND	GND	32

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