

Graphical Console Unit



Need

These days most of us look for a **safe and secured** place to live in. A secured home decorated with other amenities like **entertainment, automation, communication** and **console** application makes a home more “**smarter**” in all aspects.

To achieve this we needed an integrated system specifically designed to accommodate all the above functionality.

To operate complete system, we require a beautiful and easily understanding GUI that will be operated by all members of the family and which would be aesthetically pleasing.

Challenges

- High speed signal routing considering stringent space constraint form factor design
- Design consideration while layouts design for switch and WAN port to achieve best possible throughput without having any cross talk
- Tuning of filter components to get best audio and video quality
- Audio/Video algorithm implementation and optimization
- Complete design testing in short span for time to market

Highlights:

- AC-97 Codec Support, Stereo Line-in, Mono Microphone, Stereo Line-out
Audio/Video streaming for door phone
- Device has passed environmental testing conducted at government approved lab
- Shows the complete status of home appliances on this unit.
- User can control various appliances on finger tip example bulb, fan, gas valve and many more

Tasks involved:

- Schematic design and layout design
- Signal Integrity analysis, DC analysis, load analysis
- Device driver and windows development for all interfaces
- Functional testing of all interfaces
- Environmental testing of the digital home solution as a whole unit
- Documentation: Design document, BOM, testing guidelines, test report generation

Solution:

Aftek has designed and developed a complete system to provide the end users with a safe and secure home the Digital Home Gateway (DHG) system provides security, safety, home automation, entertainment and communication gateway to access all the features.

The intuitive user interface to this system is a LCD panel which can be installed at a convenient location in the user home. This is called as the Graphical Console Unit which is a GUI system. Graphical Console Unit is face of complete DHG systems functionality.

Graphical console unit supports interfaces for external world like color TFT display with integrated touch screen, home network like LAN, USB 2.0 host and device, audio-video communication and wifi connectivity.

Various algorithms for acoustic echo cancellation, video rendering engine and high class speaker phone functionality are implemented.

The graphical console unit can be used in various other applications like live video streaming, home automation and communication gateway. It provides entertainment features like video on demand, MP3 player, Web/Internet browsing and FM radio.

Graphical Console unit uses

Processor: Intel's Xscale processor -PXA 270, 312 MHz

Memory: 64 MB SDRAM, 64 MB NOR FLASH

Serial: One debug port RS232

Network: One LAN port

USB2.0: Host and device

JTAG: For Programming

Storage: SD/MMC

Display: 5.7"Color TFT Transmissive QVGA LCD with touch screen,

Audio: AC97 Audio codec with Stereophonic sound
Microphone

Operating system: Windows CE.NET 5.0