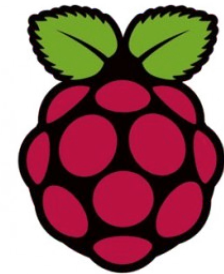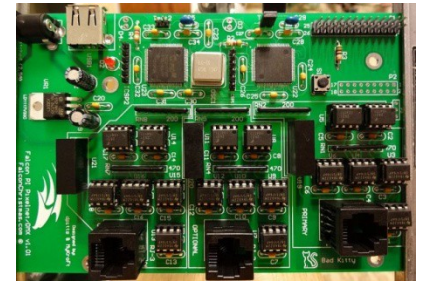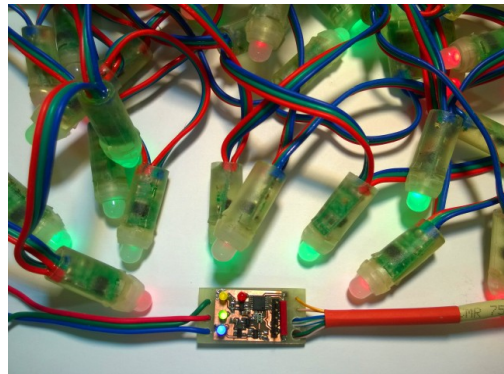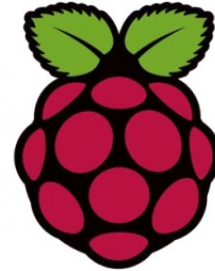# Falcon Pi Player

What is Falcon Christmas?

- Hardware and Software solution designed for high channel counts
  - Hardware
    - Falcon Pixelnet 8-Port and 16-Port string controllers
    - Falcon Pixelnet Hub, 16 strings
    - Falcon Pixelnet & DMX Dongle (FPD)
    - Falcon Pixelnet to DMX Bridge
    - Falcon ATX power supply adapters
    - Falcon Micro Controller (Mini version of Pixelnet SSC)
  - Software
    - Falcon Pi Player (FPP)
    - Falcon Firmware

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The Falcon Pi Player

- The Falcon Pi Player (aka FPP) is a lightweight, optimized, feature-rich sequence player designed to run on low-cost SBC's (Single Board Computers).
  - It was initially available via pre-packaged SD images for the $35 Raspberry Pi, leading to the FPP name.

- Open Source Software available for free at
  - FPP support is via web forums on the falconchristmas.com web site.
  - Licensed under the Gnu Public License (GPL), contributions of both code and ideas are welcome.

- Hardware Required
  - Raspberry Pi and support components (for stock FPP SD image installs)
  - BeagleBone Black, Plug computer (PogoPlug, etc.), or any virtually any other Linux system (if you are Linux savvy or love to tinker).

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Falcon Pi Player Features
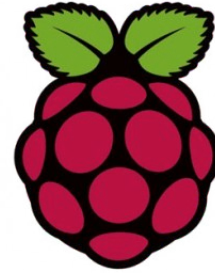
- 100% web-based UI for full control via any desktop or mobile device
- Flexible playlist scheduler
  - Individual Days, M-F, M/W/F, Tu/Th, F/Sa, Su-Th, Sa/Su
- Current release has been tested to 64K channels on a 700Mhz Raspberry Pi
  - Several users ran over 20K channels for their 2013 shows using FPP on a Pi as their primary show computer.
- Multiple channel output interfaces supported
  - FPD, E1.31, USB devices supporting DMXPro/DMXOpen/Pixelnet-Lynx/Pixelnet-Open/Renard, and direct pixel attachment via a SPI-WS2801 driver.
- Master/Slave sync
  - Allows multiple FPP/Pi instances to act together for increased channel count

FPP Features - continued
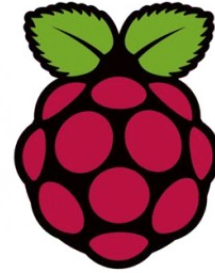
- Supports display synchronization with both audio and video files.
  - Supported Audio Formats: OGG and MP3
  - Supported Video Formats: H264/MP4 (playback is hardware accelerated on the Pi)
- 12 directly attached Pixelnet/DMX outputs via FPD add-on board
  - FPD v1 can output up to 8 universes of Pixelnet plus 4 DMX or up to 12 DMX
  - FPD in development will support 12 full universes of Pixelnet (49152 channels!)
- E1.31 bridge mode allows FPP to act as an E1.31 to Pixelnet/DMX bridge
- Support for battery-backed clock modules for the Pi to allow off-the-grid shows
  - DS1307 and rasclock modules supported
- Optional wireless network support via USB wireless NICs

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FPP Features - continued
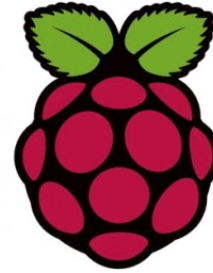
- Support for external scripts to overlay blocks of data
  - Memory-mapped channel block overlays can be turned on or off individually
- Effects subsystem to allow 'mini-sequences' to be played at any time whether a sequence is running or not
  - Effect data is overlayed on top of existing output data at specified start channel
- Event subsystem to allow user-driven or sequence-driven actions
  - Events can trigger effects sequences to be played
  - Events can trigger external scripts to be run
- Compact hardware gives the option of putting the show computer closer to the show or with the show.

So what does it really cost?

- Required Components (under $60 depending on vendor, sales, etc.)
  - Raspberry Pi Model B w/ 512MB RAM & dual USB ($35-45)
  - 4+ GB Class-10 SD Card ($8+ depending on size & speed)
    - Raspbian Linux OS image
  - 4+ GB USB Flash Drive ($8+ depending on size & speed)
    - Sequences, media files, configuration, and logs
  - USB Power Supply ($5 or check your junk drawer)
    - (1-Amp required, 2A recommended)
- Optional Components
  - Clock module ($13)
  - Case for the Pi ($9 and up or make your own)
  - Powered USB Hub (for higher powered USB devices such as a FM transmitter)
  - USB hard drive (replaces the USB flash drive and plugged into the hub)
  - USB Mixer (for better control over audio levels)
  - Projector or large TV/Monitor for incorporating video into your show

Anything else I should know?

- xLights/Nutcracker will be required to convert from your sequencer's file format to the .fseq file format used by FPP.
  - The FPP Developers have been experimenting with on-the-fly conversion of uploaded sequence files from sequencers supported by xLights/Nutcracker, but this functionality will not be in the next release.
- Use a high speed USB drive for the media, especially with higher channel counts.
  - Slower flash drives may experience lag and hesitations in both audio/video and sequence playback if the drive can not handle the I/O requirements of the sequence and media being played.
- Use a high-speed SD card
  - The SD card is not used much once the Linux Operating System boots and FPP is started, but when the SD card does need to be accessed, slower-speed SD cards may cause I/O latency which may affect show playback.

λ Setting up the FPP

- Instructions to prepare the SD card for the FPP.
  – http://falconchristmas.com/forum/index.php/topic,483.0.html
- Tutorial videos can be found here.
  – http://falconchristmas.com/forum/index.php/topic,371.0.html
- Download the formatting tool for SD cards.
  – Windows: https://www.sdcard.org/downloads/formatter_4/eula_windows/
  – Macintosh: https://www.sdcard.org/downloads/formatter_4/eula_mac/
- Download the FPP NOOBs Software.
  – https://sourceforge.net/projects/falconpiplayer/files/latest/download?source=navbar

λ Setting up the FPP - continued

- Use xLights/Nutcracker to convert sequences to FPP format (fseq)
  – http://nutcracker123.com/nutcracker/releases/
- Use Audacity to convert music files to OGG format
  – http://audacity.sourceforge.net

Demo!

Q & A