xLicht 🎮✨

The Ultimate Smart LED Fan Mod for Xbox 360 RGH

xLicht connects your Xbox 360's internal fan to a smart WS2812B LED ring that reacts to the game you are playing in real-time.

Unlike legacy mods that require compiling complex `.xex` plugins, xLicht uses a **UART Sniffing** technique. It listens to the debug logs natively output by the console and detects when **Aurora Dashboard** launches a game.

✨ Features

- **Game Awareness:** Automatically switches colors based on the active game (e.g., *Halo 3* = Blue, *Gears of War* = Red).
- **Web Dashboard:** Configure everything from your phone via a WiFi Captive Portal. No app required.
- **Game Library:** Save, load, and delete custom color profiles for up to 200 games.
- **Boot Animation:** Smooth, 5-second startup sequence (Wipe + Breathing).
- **Safe Power:** Built-in software current limiting (850mA) allows safe powering directly from the motherboard.

❓ Why Aurora Dashboard?

xLicht works as a "Passive Listener." It does not run any code on the Xbox itself. Instead, it relies on the debug output that **Aurora Dashboard** generates when it launches a game or returns to the menu.

- When you launch a game, Aurora prints: `Launcher Path: ...` or `TitleId changed`.
- xLicht reads this text via the hardware UART lines, identifies the game ID, and updates the LEDs.
- **Requirement:** Aurora must be your default dashboard for this detection to work reliably.

🛠️ Hardware Required

Component	Recommendation
Console	Xbox 360 Slim (Trinity or Corona motherboard) with RGH/JTAG.

MCU	**ESP32 DevKit V1** (Dual Core required for smooth animations).
LEDs	**WS2812B Strip** (144 LEDs/m, IP30 Black PCB). Cut to fit fan size.
Wiring	30 AWG (Data), 22 AWG (Power).
Power	5V Motherboard Tap (Capacitor spot) OR 12V Main Rail + UBEC 5V 3A.

🔌 Wiring Guide

1. Data Connection (The "Sniffer")

The ESP32 needs to "hear" the Xbox. We connect to the **UART Transmit (TX)** pin on the motherboard.

- **Xbox Point:** Header **J2B1** (Near the white fan connector).
  - **Pin 2** (Inner row, usually the pin right next to the square pad).
- **ESP32 Point:** Pin **RX2** (GPIO 16).

2. LED Connection

- **LED Data:** Connect LED Green Wire to ESP32 **D5** (GPIO 5).
- **LED Power:** Connect LED Red (+5V) and White (GND) to the same power source as the ESP32.

3. Power Source

- **Option A (Easiest):** Tap a **5V Switched** point (like the DVD drive power connector or a nearby 5V capacitor pad).
  - *Note:* The firmware is set to limit power to **850mA** to keep this safe.
- **Option B (Pro):** Tap the main **12V Rail** (under PSU socket) and use a **UBEC 5V 3A** to step it down.

💾 Installation & Setup

1. Console Preparation

Your Xbox needs to be configured to output the debug text that xLicht listens for.

1. Boot your Xbox and open **DashLaunch**.
2. Go to **Configurator** > **Settings**.
3. Ensure `debugout` is set to **TRUE**.

4. Save the settings to your `launch.ini` (usually on HDD).
5. **Aurora Dashboard** must be your default dashboard.

2. Flashing the ESP32

1. Download this repository.
2. Open `Firmware/xLicht_ESP32/xLicht_ESP32.ino` in **Arduino IDE**.
3. 🔒 **Security Setup (Important):** Look at the top of the file for the `WIFI & SECURITY CONFIGURATION` section. Change the default passwords before uploading!

```
const char* ssid = "xLicht";             // Your Hotspot Name
const char* password = "CHANGE ME";      // Your Hotspot Password
const char* app pass = "CHANGE ME";      // Web App Login Password
const char* ota_pass = "CHANGE_ME";      // Wireless Update Password
```

4. Install required libraries via Library Manager: `FastLED`, `ArduinoJson`, `ESPAsyncWebServer`, `AsyncTCP`.
5. Select Board: **DOIT ESP32 DEVKIT V1**.
6. Upload.

3. Using the App

1. Turn on your Xbox.
2. On your phone, connect to WiFi: `xLicht` (or your custom name).
3. The configuration page should open automatically (Captive Portal).
   - *If not, go to `http://192.168.4.1` in your browser.*
4. Login with your **Web App Password**.
5. **Configure:** Set your "Active LEDs" to match your strip length and pick a default system color.
6. **Play:** Launch a game! The App will show the Game ID. Give it a name, pick a color, and hit **Save**.

🐛 Troubleshooting

- **"Waiting..." status never changes:**
  - Verify your wire is on **J2B1 Pin 2**.
  - Verify `debugout = true` is saved in DashLaunch.
  - Ensure **Aurora Dashboard** is running (the mod relies on Aurora's debug logs).

- **LEDs flash white/randomly on boot:**
  - This is normal during the split-second boot process. The code stabilizes them immediately after startup.

🤝 Credits

- Built with FastLED for animations.
- Powered by ESPAsyncWebServer.
- Inspired by the Xbox 360 RGH modding community.

📄 License

This project is licensed under the MIT License - feel free to fork, modify, and sell your own kits!