How to Build an All-Black GameBoy Advance with an IPS V2 Screen (Using a 32-pin Motherboard)

# Introduction

This was my first time modding a GameBoy Advance, and it took me around 3 hours to complete. I followed community guides, took my time with the delicate parts, and learned a lot in the process. The final result is a clean, modern build with an IPS screen and a striking all-black aesthetic—something that looks and feels premium, but still respects the original design.

# Parts & Tools I Used

## Core Components

1. eXtremeRate IPS Ready Shell (Black-Black)  
2. 32-pin GBA Motherboard  
3. 2.9" Original-Size IPS High Brightness LCD (Black version)  
 - Comes with both 32-pin and 40-pin ribbon cables  
 - I used the 32-pin for compatibility  
4. HD Screen Protection Film (Optional)  
 - Omitted in my build; the glass screen is already scratch-resistant

## Tools & Supplies

- Tri-wing screwdriver (be cautious—see below)  
- Phillips screwdriver  
- Isopropyl alcohol (for cleaning only the motherboard)  
- Microfiber cloth  
- Cotton swabs  
- Plastic pry tool  
- Tweezers (optional)

# Screw Types & Notes

Understanding the screws before starting is crucial:  
  
- Motherboard: 2 or 3 Phillips screws (depends on your board)  
- Metal Cartridge Tray: 4 Phillips screws  
- Back Shell: 6 Tri-wing screws  
- Battery Cover: 1 Phillips screw  
  
The screws provided in the replacement shell aren’t as durable as the originals. Use gentle, precise turns—over-tightening can strip or bend them.

# Real-World Build Insight: What I Learned

During my build, one of the tri-wing screws that came with the shell bent while inside the groove. The grooves aren’t pre-threaded, which makes closing the shell a repetitive screw-unscrew process to find the correct fit. It took me three tries and a lot of patience to extract the damaged screw. Thankfully, I had a spare tri-wing screw from another device that fit perfectly. Lesson learned: keep a few extras handy, and don’t force anything closed—an uneven seal allows dust inside and looks unfinished.

# Pre-Build Cleaning: A Must-Do

Before any assembly, I cleaned my 32-pin motherboard using isopropyl alcohol (and only the board). Clean these areas:  
  
- Button contact pads (gold/brass)  
- Battery contact points  
- Power switch  
- Cartridge slot  
- Speaker contacts  
  
Never clean buttons or the screen with alcohol. It can degrade rubber components and screen coatings.

# Assembly Steps

1. Disassemble the Original GBA  
- Remove screws and gently separate the shell  
- Extract the board, screen, and buttons  
  
2. Install IPS Screen  
- Fit the IPS screen into the new shell using the adhesive bracket  
- Connect the ribbon cable (match to your 32-pin motherboard)  
- Carefully align the screen  
  
3. Reassemble with the New Shell  
- Install buttons, membranes, and motherboard  
- Install the cartridge tray (4x Phillips screws)  
- Connect everything, close the shell, and screw it shut  
  
4. Test Your Mod  
- Power on and check display clarity, buttons, and sound  
- Insert a game to test the cartridge reader

# Optional Modern Upgrade

Rechargeable Li-ion Battery (1800mAh):  
- USB-C charging port  
- 5–8 hours playtime  
- Price: ~$30–$60  
- I skipped this for my first build to stay under a $150 budget, but it’s worth considering for future mods.

# My Budget & Ordering Experience

I ordered all components from AliExpress, including:  
- IPS screen  
- eXtremeRate shell  
- Tools and accessories  
  
Total cost: ~$140 (including shipping and discounts)  
Wait time: ~15 days  
Packaging: Arrived in bubble wrap and good condition

# Conclusion

Modding this GameBoy Advance was one of the most rewarding DIY projects I’ve taken on. The IPS screen looks stunning, the all-black finish is sleek, and the experience taught me how to troubleshoot, stay patient, and enjoy the process. Whether you're a first-timer or a retro enthusiast, this project is well worth the effort.

# FAQ: Common Questions & Troubleshooting

## What if my screen doesn’t turn on?

Check Your Connections: Verify that all ribbon cables and connectors are properly seated.  
Verify Power Supply: Ensure the power source is fully charged.  
Inspect Polarity & Orientation: Ensure correct connections.  
Review Kit Instructions: Check jumpers or configuration settings.  
Test the Screen Separately: Use a known-good setup to isolate the issue.

## Can I use a 40-pin board with this kit?

Yes, most kits support both 32-pin and 40-pin motherboards. Ensure your ribbon cable matches your board type, and refer to the kit's wiring diagrams.

## Is soldering necessary?

No, many IPS kits are plug-and-play. Some optional features may benefit from soldering, but it can usually be avoided by choosing solderless kits.

## What flash carts do you recommend for reliable GBA gameplay?

The EZ Flash Omega Definitive Edition is highly recommended for its UI, save reliability, and troubleshooting ease. While I haven’t used it yet, it’s a strong contender for future upgrades. Other carts may suffer from save corruption or clunky interfaces.

# Future Upgrades: Take It Further

## 🔊 Speaker Mods

- Improved Audio: Replace the stock speaker for better volume and clarity.  
- Simple Installation: Some are plug-and-play or require minimal soldering.

## 🔋 Battery Mods

- Go Rechargeable: USB-C Li-ion batteries offer more consistent power.  
- Playtime Boost: Up to 5–8 hours with a typical 1800mAh battery.

## 🗂 Flash Carts & Homebrew

- Game Libraries: Load homebrew, translated games, and backups.  
- Enhanced Features: Faster loading, save states, and more.