

XEMOG Advanced 1/24 LED Controller

User & Installation Manual

Thank you for choosing the **XEMOG Advanced LED Controller**. This miniature, high-performance module brings cinematic lighting realism to your 1/24 scale masterpiece. Driven by a low-power **STM8L microprocessor** and featuring smooth **F-Correct™ dimming**, this kit delivers flicker-free, creator-ready performance for photography and video.

1. Technical Specifications

- **Board Dimensions:** 28mm x 35mm
- **Power Source:** Integrated 350mAh LiPo Battery
- **Charging:** Onboard Micro-IC Charger (Charged via the integrated power port)
- **Wiring:** 18 Independent LEDs 0603 with ultra-fine, low-profile litz wires
- **Connectors:** Micro JST 1.5mm plug-and-play terminals
- **Control Link:** Infrared (IR) Remote Control

2. Board Overview & Wiring Layout

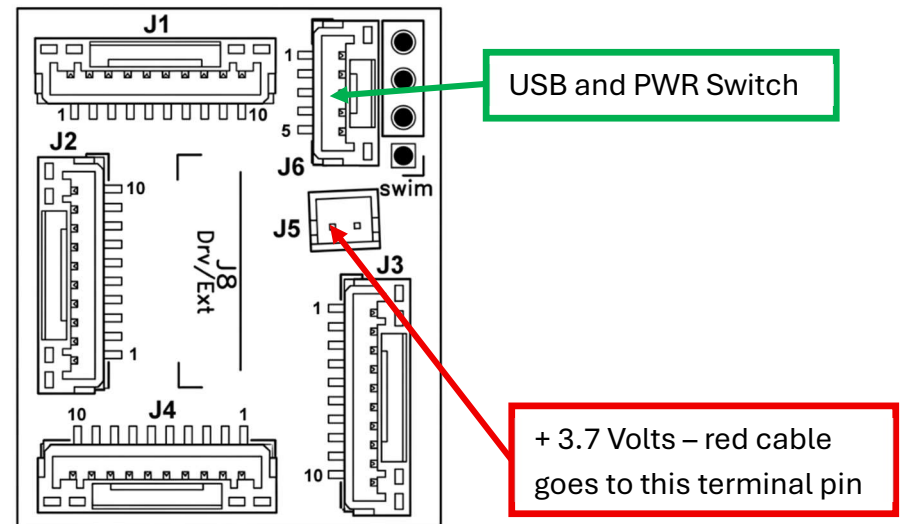
The XEMOG board is designed to sit discreetly inside a 1/24 scale chassis (ideal for the Nissan Skyline GT-R V-spec II or similar models).

⚠ IMPORTANT SAFETY NOTE: Always route the ultra-thin litz wires away from moving chassis components or sharp plastic edges to avoid scraping the insulation.

READ THIS FIRST: Intended Use & Disclaimer The XEMOG LED Controller is engineered, programmed, and manufactured **strictly for scale model hobby applications**, specifically optimized for 1:24 scale model vehicle illumination. **Prohibited Modifications:** Do not attempt to use this control board to power high-current aftermarket RC vehicle electronics, high-draw traction motors, external relays, or household lighting systems.

Electrical Limits: The onboard circuit traces, integrated charging chip, micro-switches, and microprocessor pins are rated exclusively for the low-voltage, low-current micro-LEDs provided in this kit. Connecting unapproved or high-draw loads can cause thermal damage, permanently destroy the microcontroller, or compromise the safety of the lithium-polymer battery cell. **Liability:** The manufacturer assumes no responsibility or liability for equipment damage, board failure, or personal injury resulting from unauthorized modifications, reverse engineering, or use outside of the product's intended scale-modeling scope.

Board Connector Side Illustration



Port Connections (JST 1.5mm)

- **J5 - Battery Input:** Connect the included 350mAh LiPo battery to this terminal.
⚠ CAUTION: While the JST connector is keyed to prevent reverse insertion, always verify polarity against the manual illustration before plugging it in. The red wire indicates positive (+) voltage.
- **J6 – USB / Main Power Switch:** Connect the 5-pin wire harness attached to the micro-USB charging terminal and the physical power switch assembly.
- **Microprocessor Functional Outputs (J1, J2, J3, J4):** To simplify installation, the LED wiring looms are color-coded by function. All **negative (GND) wires are black**, while the **positive (+) wires use distinct colors** to identify the LED type as follows:

LED color	Cable color (to LED's anode, positive terminal)
Cold White	Purple
Warm White	Yellow
Blue	Blue
Red	Red
Green	Green
Yellow	Orange

The configuration of each connector is as follows:

J1 Pins	LED Color	Cable color	Function
1,2	Cold White	Purple	High Beam Left
3,4	Cold White	Purple	Low Beam Left
5,6	Blue	Blue	Dome light – (For inside interior)
7,8	Cold White	Purple	Low Beam Right
9,10	Cold White	Purple	High Beam Right

J2 Pins	LED Color	Cable color	Function
1,2	Yellow	Orange	Turn Left (Front light)
3,4	Yellow	Orange	Turn Left (Side light)
5,6	Yellow	Orange	Turn Left (Rear light)
7,8	Red	Red	Break Light (Taillights)
9,10	Red	Red	Break Light (Taillights)

J3 Pins	LED Color	Cable color	Function
1,2	Yellow	Orange	Turn Right (Front light)
3,4	Yellow	Orange	Turn Right (Side light)
5,6	Yellow	Orange	Turn Right (Rear light)
7,8	Cold White	Purple	Reverse Left Light
9,10	Cold White	Purple	Reverse Right Light

J4 Pins	LED Color	Cable color	Function
1,2	Red	Red	Low Beams Left – (Rear)
3,4	Red	Red	Low Beams Right (Rear)
5,6	Red	Red	3 rd Break Light (Rear)
7	(not connected)		
8,9,10	IR Sensor		IR remote control receiver

3. Important: Pre-Installation Bench Test

Before permanently installing the wiring looms, LEDs, or routing cables inside your scale model chassis, we highly recommend performing a quick bench test to ensure all components arrived in perfect working order following transit.

1. **Unpack Components Safely:** Lay the XEMOG control board, wire harnesses, and remote control out on a clean, non-conductive surface (such as a cutting mat or wooden desk).
2. **Connect the Switch & Power:** Ensure the main power switch wire harness is connected to the **J6** port and plug the 350mAh LiPo battery into the **J5** terminal.
3. **Connect a Test Loom:** Identify and Plug all LED wiring looms (such as the J1, J2, J3 and J4 looms) into its respective port.

4. **Power Cycle:** Turn the unit on via the switch and the remote. Verify that the initial 2-second illumination and double-blink sequence occur successfully.

💡 **Why Bench Test First?** Scale model installation often involves permanent adhesives, custom modifications, and tight cable routing. Verifying system functionality *prior* to assembly ensures a flawless installation process and makes troubleshooting significantly easier if a connection was jarred loose during shipping.

4. Operation & IR Remote Functions

Initial Setup & Powering On:

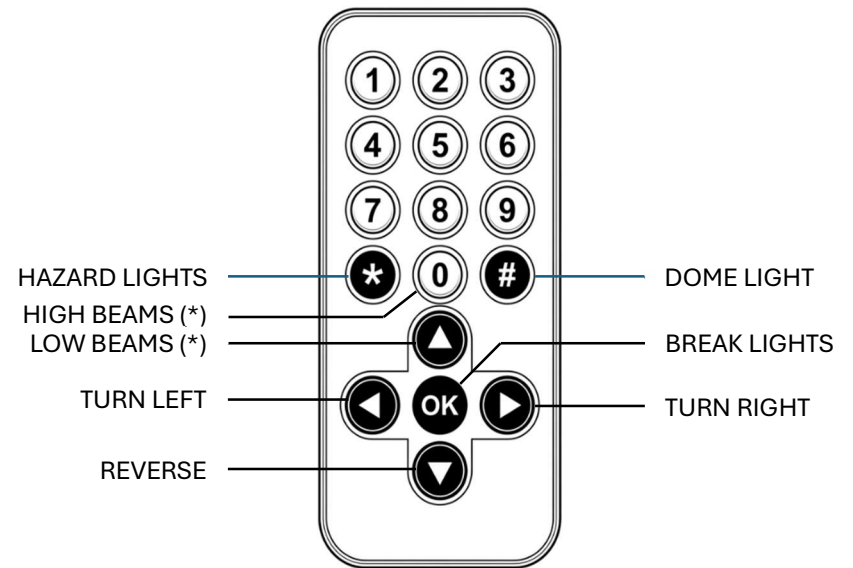
1. **First-Time Power:** Ensure the LiPo battery is properly connected to the J5 JST port.

📦 **Shipping Note:** For transit safety and compliance, the 350mAh LiPo battery is shipped at a 30% State of Charge (SoC) or lower. Before your first extended modeling session, please fully charge the battery by following the instructions in **Section 4: Battery Management & Charging**.

2. **System Power Sequence:** Turn on the module by pressing the POWER button.

Initialization Feedback: Upon power-up, the system will instantly illuminate all connected LEDs and maintain them at full brightness for **2 seconds**. Following this, the lights will **blink twice**. This visual sequence confirms the microcontroller has successfully initialized and is ready to receive commands from the remote control.

3. **Function Modes:** Use the remote buttons to cycle between low beams, high beams, and model-specific illumination configurations.

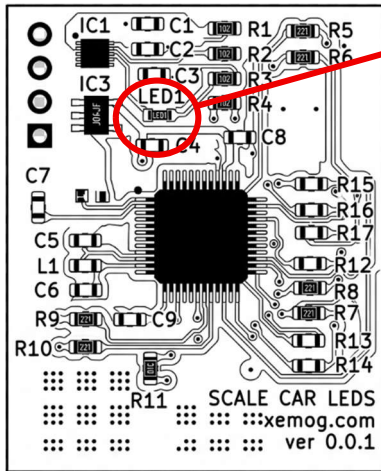


(*) Γ-Correct™ Headlight Operation

The XEMOG controller features an advanced **Γ-Correct™ (Gamma-Corrected) Dimming Algorithm** applied exclusively to the primary forward illumination systems (Low Beams and High Beams). Traditional microcontrollers scale light linearly, which results in a harsh, sudden pop to human eyes. XEMOG dynamically adjusts the pulse-width modulation (PWM) duty cycle to match natural human visual perception, delivering an ultra-smooth, highly realistic cinematic fade transition that mimics real automotive halogen or modern xenon projection systems.

Modeling Tip for Photography & Video: Thanks to the high-frequency internal timer logic executing this algorithm, the headlight illumination is completely flicker-free. This ensures flawless performance on camera, completely eliminating the annoying rolling horizontal lines or strobe effects common when photographing scale models under shutter speeds over 1/60 sec.

4. Battery Management & Charging



Battery charging indicator

Charging: Plug a compatible charging cable into the board's power input. The integrated charging IC safely handles the power distribution to the 350mAh LiPo cell. A designated red onboard LED will illuminate to signify that charging is actively in progress. Once the battery reaches its optimal full capacity, this LED will automatically extinguish.

A complete charge cycle typically requires **2 to 3 hours**, depending on the power supply source. **Storage:** If storing your scale model for several months, disconnect the JST battery plug from the board to protect the cell from absolute depletion over long standby periods.

Support & Community: Designed by modelers, for modelers.

We are constantly striving to push the boundaries of scale realism, and your feedback directly drives our engineering roadmap.

Have a feature request for next version? Whether it's a specific flashing pattern for emergency vehicles, synchronized exhaust backfire LEDs, or a unique remote control mapping, we want to hear what your dream build requires.

Share Your Feedback: Contact us directly through our eBay store or visit xemog.com to submit feature ideas, request custom firmware modifications, or show off your finished build!

Love your XEMOG kit? Please leave us positive feedback on eBay!.

Your support helps an independent creator keep innovating!