uniLIGHT Module BLACK.4*PLUS*

Our most popular light controller got now in a new updated version - **BLACK.4*PLUS*** – all set and ready to impress! All-purpose controller module rose to fit most of the lighting functions and now equipped with the **uniLIGHT*PLUS*** interface and programmable via the **uniLIGHT*DESK***, where alongside already known functions, a variety of the additional settings can be configured. Its primary use remains for simple operating of most common lighting functions: strobes, navigation lights, beacon and landing spotlight.an ACL or BEACON light or alternatively for switchable spotlights.

Highlights of the *PLUS* Series

Configuration can be set up for classic operation or custom light patterns

Software compatible with **uniLIGHT*DESK***

Dynamics more refined, faster and sharper light effects with 32bits depth

Safety basic short-circuit protection in outlets, undervoltage and temperature protection settings available

Master-Slave principle no switch needed in the load circuit, activation occurs via remote control

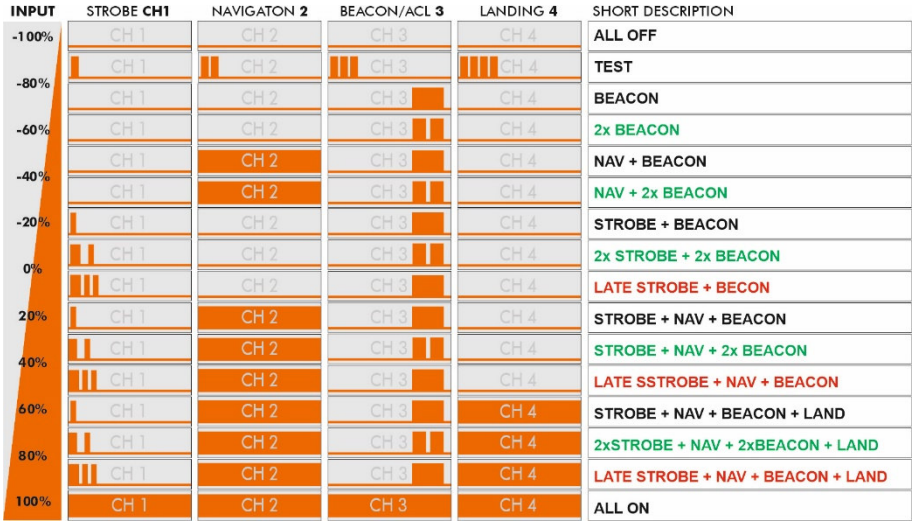
Special functions smooth transition switching, navigation+strobe sport function, power min/max limitation

Servo output programmable output for control of the folding mechanism or other servos

Operating modes

Classic In standard classic operation, the output generates a light pattern based on the input signal. This mode is typically used for various functions such as flashing or blinking lights but can also be utilized for spotlights or special functions. The servo path is divided into 16 sections, which can be activated based on the transmitter settings.

The blue status LED remains constantly lit in this mode.



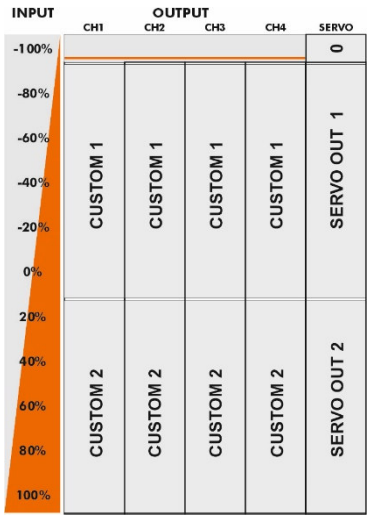
- -100% (<1ms pulse length): Light off
- +100% (>2ms pulse length): Light on
- Inbetween lie 14 predefined light patterns

Always ensure that the selected light can handle the intensity, particularly regarding heat dissipation. Short lighting patterns , such as a single strobe have a DutyCycle of approx. 3% (1/32), the double pulse 9% (3/32). Always check heat development for your specific application and setting!

Custom in this mode, servo-path is divided into only three sections, corresponding to a 3-position switch.

- **-100%**: The system is turned off
- **Middle position** or below: the first custom pattern is activated
- **Up to 100%:** the second custom pattern is activated

The blue status LED remains on with short interruptions to indicate this operating mode.



Those light patterns can be freely programmed using **uniLIGHT*DESK***. To do so, connect the MODUL-PLUS programming cable to your Windows PC and install the software from our homepage https://www.unilight.at/downloads

In **uniLIGHT*DESK*** select the **BLACK.4*PLUS*** controller and follow the on-screen instructions.

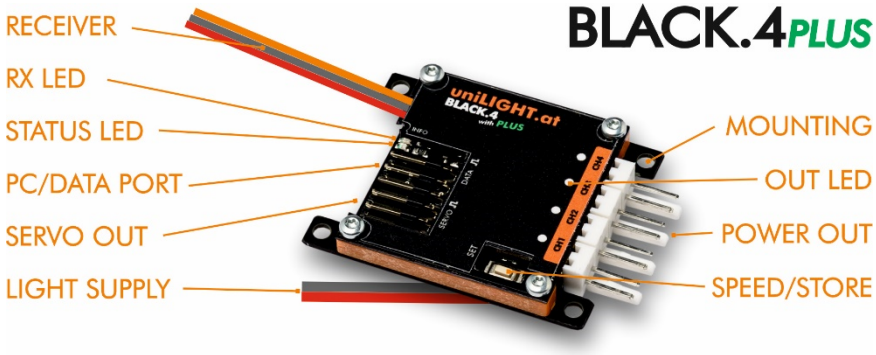
Servo output

Next to the programming port, the **BLACK.4*PLUS*** also features a programmable servo output, which can be used in custom mode**.** This allows assigning a specific servo position to each of the three operating states — particularly useful for drop-out landing lights, valves, or other control functions**.**

Note: The servo output is deactivated when switching back to normal mode.

Note: The servo receives the same voltage as the lighting battery, so it is recommended to use only HV servos when operating on a 2S battery. The servo pulse refresh rate matches that of the connected receiver. However, very high refresh rates could affect system performance.

Connection and programming



The lighting system is typically controlled via 3-position switch (knob). The simplest approach is to start from the middle position **-1-** and adjust the servo midpoint (Sub-Trim) until a desired light signal is achieved.

The **-0-** position with negative full deflection. (-100% or lower) is the default state for „all off". If the midpoint has been shifted or a single flash should be displayed in the default state, adjust the servo full deflection on the transmitter until the desired light pattern is triggered.

Finally, switch to position **-2-** and adjust the servo's full deflection to set a second operating mode.

Note: Values may vary depending on the manufacturer. Adjust the range until the desired signal is displayed live.

A typical programming setup for a motorized model:

- **Position -0-** Lights off
- **Position -1-** Standard operation lights (e.g., double strobe, navigation and a beacon)
- **Position -2-** Same light pattern + spotlights are activated

The **-2-** position can also be activated via flap control on the transmitter. These functions are usually easy to program using flight mode, mixers or logical functions on your transmitter.

Strobe duration and speed rate

All **uniLIGHT** controllers allow you to adjust the speed or repetition rate of the light pattern using the button. When the button is continuously pressed, the repetition rate gradually slows down until it reaches the slowest setting, then jumps to the fastest speed and goes through the cycle again. A more convenient way to adjust this setting is via **uniLIGHT*DESK.***

Note: At the same time pressing the button also saves the setting for a Solo-operation, so be mindful of it, if not intended.

Operating without RC

If the controller is to be operated independently (solo mode) without a remote control signal, the desired light pattern must be selected once. To achieve that: connect a servo tester and choose a light pattern. Briefly press the button to store the selection. Finally, to activate the controller, a power source need to be connected to a controller either via a Y-cable from the receiver (without the signal wire) or directly from the lighting battery.

Alternatively, on the back of the controller, there is a solder bridge at the red/black cable, marked as the „Stay ON" and „SO>". If this bridge is soldered, the controller will always run as soon and as long as the lighting battery is connected. In solo mode, the yellow/green RX LED will remain off, indicating that no valid RC signal is detected.

Note: The controller always consumes power in solo mode, even when no light pattern is active (blue LED is on). In Master-Slave operation, this prevents the lighting battery from needing to be disconnected separately to avoid self-discharge.

Resetting the Controller

Start the receiver power supply by pushing the SET-button continuously for approximately 10 seconds. When the light signal switches to a steady lighting, the reset is complete and the factory settings are restored.

Note Safety functions can be disabled for special operation purposes (e.g., Night flight) → uniLIGHT.DESK

Special functions

The **uniLIGHT BLACK.4*PLUS*** module also allows for various special functions to be assigned to the channel. The easiest way to configure these is via **uniLIGHT*DESK*** and a programming cable. However, some basic settings can also be selected using the button.

Hold the SET-button and turn on the receiver power supply.

1. After releasing the button, the channel is activated and starts blinking:
    - 1x = special functions OFF
    - 2x = smooth transition switching activated
    - 3x = base level activated
2. To change the setting press the button for about 1 second (Status LED will confirm)
3. To switch the channel press the button for about 2 seconds (Signal on RX LED will confirm)
4. Disconnect the receiver power supply to exit the programming mode.

Smooth Transition switching simulates the effect of incandescent bulbs. Used to imitate a slow-flashing rotating beacons. The light won't switch on/off sharply, instead it will remain in a softer transition.

Base level is applicable for Sport purposes, adding 10% baseline brightness to the light. This allows strong strobe lights to function as BOTH position and strobe light. Ideal for sport models and helicopters: one light = two functions.

Note: Special functions are controlled via PWM technology. Use twisted cables when possible and install wiring as far from receiver system as possible. Always perform a thorough range test prior operating.

Technical data

Controller receiver:	3.6-9,6V
Light/Load:	6-14V (depending on light)
Dimensions:	50x35x6mm
Weight (without cable):	8g
Current load per channel:	5A up to 16V
Total current load:	5A up to 16V, 10A max
Galvanically isolated circuits:	Yes
Operation without RC:	Yes
Effects with adjustable speed rate:	classic 14+2 / custom 2+1

Safety features

If a short circuit or severe overload occurs at the output, the system will attempt to shut it down immediately. The blue LED blinks **ONCE** to indicate this. After approximately 10 seconds, the system will try to restart. This is only a basic protection feature and may be affected by external factors. Short circuits in the lights and wiring should always be avoided!

If undervoltage is detected, the blue LED blinks **TWICE**. The default voltage threshold is set to approximately 6V, optimized for 2S LiPo batteries. This threshold can be adjusted as needed.
If overheating is detected and this function is enabled in **uniLIGHT*DESK***, the blue LED blinks **THREE TIMES**. Temperature measurement is done via the processor and should be considered a rough estimate rather than an exact reading.

All safety features can be configured in **uniLIGHT*DESK***, as they may interfere with certain operations. Special Considerations for Night Flying: In night flying scenarios, a fully depleted battery may be preferable over an automatic shutdown due to undervoltage. Similarly, if a cable or light gets damaged, the system would not just shut down immediately.