



Technical Documentation & User Manual

# Sclera 41mm

Technical LED Scooter Light



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# 1 Safety Instructions

This documentation contains vital operating, maintenance, and safety regulations. Read this manual completely and carefully before operating the mkDive Sclera 41mm for the first time. Keep this manual in a safe place for future reference.



Attention! The product contains integrated electric circuits. The function of pacemakers, defibrillators, and other implanted medical devices can be severely affected by these magnetic fields. It is mandatory to maintain a safe minimum distance.



Attention! The light head can become extremely hot. Danger of burns! The Sclera 41mm is designed exclusively for underwater operation. Operating the light on land for extended periods carries an acute risk of burns due to the lack of convective water cooling. Operation on land must be limited to brief functional tests.



Attention! Never stare directly into the light outlet while the device is operating, and never point the light beam at the eyes of people or animals. The extremely high luminous density of the high-power LEDs can cause irreversible damage to the retina.

## 1.1 General Operating and Safety Obligations

- The instructions provided in this user manual must be strictly followed. Failure to do so may lead to property damage, severe personal injury, or death.
- Maintain a safe distance from flammable materials during functional tests on land. The light head must never be covered during operation (fire hazard).
- Any unauthorized modification, disassembly, or alteration of the light head beyond the steps described in this manual compromises product safety and voids the warranty. All repairs must be carried out exclusively by mkDive.
- Keep the system out of reach of children and unauthorized persons.
- Ensure that the external battery pack used complies fully with the technical specifications and features fully functional protection circuitry.
- In the event of smoke formation, unusual odors, or water ingress, turn the system off immediately and physically disconnect it from the power source (battery pack).
- Always disconnect the light from the power source during transport (e.g., air travel) or long-term storage to prevent accidental activation.
- Protect the light from extreme heat, direct sunlight (e.g., inside vehicles), or open flames (danger of explosion and destruction).
- If there is visible damage to the housing, front optics, cable gland, or O-rings, terminate operation immediately.

## 2 Technical Data

The Sclera 41mm is a professional, primary technical diving light optimized for demanding environments in technical diving configurations (Sidemount, CCR, Cave) for Scooter Mount.

Table 1: Technical Specifications mkDive Sclera 41mm

| Parameter                     | Specification / Value                                  |
|-------------------------------|--------------------------------------------------------|
| Maximum Operating Depth       | 150 m (tested)                                         |
| Light Source                  | 1x CREE XHP-50                                         |
| Housing Material              | Hard-anodized Aluminum                                 |
| Input Voltage Range           | 8 V to 17 V DC                                         |
| Maximum Current (Full Load)   | 3.5 A                                                  |
| Driver Efficiency             | 96 %                                                   |
| Permissible Water Temperature | −4 °C to +30 °C                                        |
| Power Supply                  | External battery pack / canister                       |
| Driver Topology               | Synchronous Buck / Boost Regulator                     |
| Dimming Method                | Analog Dimming (100 % flicker-free, stufenlos 0–100 %) |

## 3 Commissioning and Power Supply

The Sclera 41mm is delivered ready for operation. For deployment, it must be connected to a compatible external battery canister or it must be used with the delivered onboard battery-canister(buy-option). Depending on your chosen hardware configuration, this connection is established either permanently battery-housing or modularly via a wet-pluggable E/O cord.

### 3.1 Requirements for the External Battery Canister

All commercially available battery packs are permitted, provided they meet the following minimum criteria:

- Stabilized output voltage between 8 V and 17 V DC.
- Integrated Battery Management System (BMS) featuring protection against deep discharge, short circuits, and overcurrent.
- The battery canister and its connector systems must be rated for a continuous discharge current of at least 3.5 A.

### 3.2 Requirements for the Onboard-Battery

All commercially available 21700 Li-Ion batteries are permitted to be used with Sclera 41mm where they meet the following minimum criteria:

- No BMS included
- Max. Voltage of 4.2 V DC.

### 3.3 Charging the Cells of Onboard-Battery

The Sclera 41mm comes with an battery charger. You can lay the cells in the right direction in.



## 4 Product Details and Components

The Sclera 41mm consists of the following main components:

1. LED Housing: Precision-machined aluminum body featuring optimized cooling fins for heat dissipation.
2. Control Element: Piezo Button
3. Battery Compartment: Housing for Battery Cage holding 4x21700
4. External Battery Adapter: Heavy-duty wet-room cable or E/O cord with integrated strain relief.

## 5 Operation and Software Modes

The luminous intensity of both the high-efficiency spot and the wide-angle floodlight is controlled via the piezo switch. Both light channels can be dimmed from 0 % to 100 %.

Following modes are available:

Table 2: Light Modes - Sclera 41mm

| Mode | Brightness |
|------|------------|
| 0    | 0%         |
| 1    | 30%        |
| 2    | 70%        |
| 3    | 100%       |

## 6 Care and Maintenance Instructions

To ensure the long-term reliability and performance of your mkDive Sclera 41mm under demanding technical diving conditions, adhere to the following maintenance routine:

- **Freshwater Rinse:** Thoroughly rinse the light head with clean freshwater after every use in saltwater or harsh environments. Do not use chemical cleaning agents, solvents, or abrasive brushes.

- **Optics Protection:** Protect the front optical port from mechanical impacts, drops, sand, and contact with sharp-edged gear (such as stainless steel bolt snaps) to prevent scratching.
- **Pre-Dive Inspection:** Visually verify before every dive that the front retaining ring is securely tightened and the cable entry shows no signs of wear or damage.
- **O-Rings & Seals:** The internal housing seals are maintenance-free. If you suspect any sealing defects, damage, or water ingress, return the light head directly to mkDive service.

DE: Unter folgendem Link finden Sie die Bedienungsanleitung auf Deutsch.  
EN: You will find the manual in English in the following link.

<https://mkdive.de/product/sclera/manual>



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Dieses Gerät entspricht der Europäischen Richtlinie 2012/19/EU über Elektro- und Elektronik-Altgeräte (WEEE).

This device complies with European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).



Dieses Gerät entspricht der Europäischen Richtlinie über Elektromagnetische Verträglichkeit (EMV) 2014/30/EU.

This device complies with the European Electromagnetic Compatibility (EMC) Directive 2014/30/EU.