

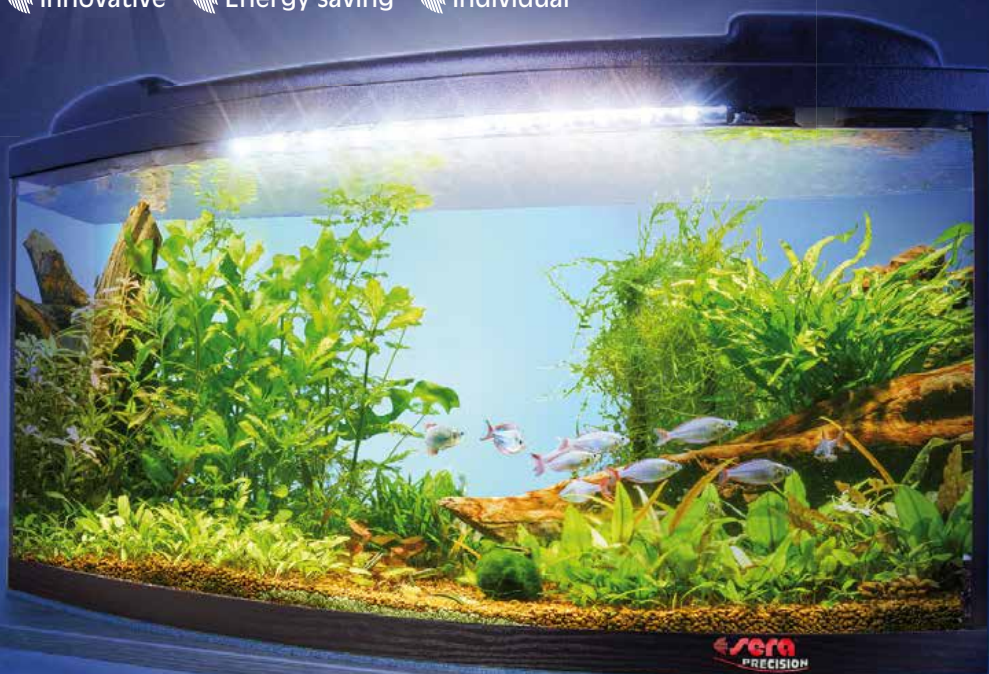
# Systemic aquarium lighting



## LED LIGHTING

Switching over never was that easy before

🌀 Innovative    🌀 Energy saving    🌀 Individual



### Economic

Save up to  
**64 %**  
energy

### Lifetime

ca.  
**30.000**  
hours

### Replaces

**T5**  
**T8**

 **Sera**®

# Innovative LED lighting

- Energy saving and long lived
- Safe and environmentally friendly
- Individually combinable



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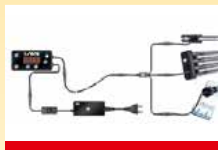
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Functional design of light as an environmental factor in the aquarium habitat is indispensable since the inhabitants of an aquarium usually almost entirely require artificial lighting.

You will succeed in creating light conditions as close to nature as possible with only a few steps when using the **sera** LED lighting, which will furthermore match your requirements individually.

# Advantages of LED lighting



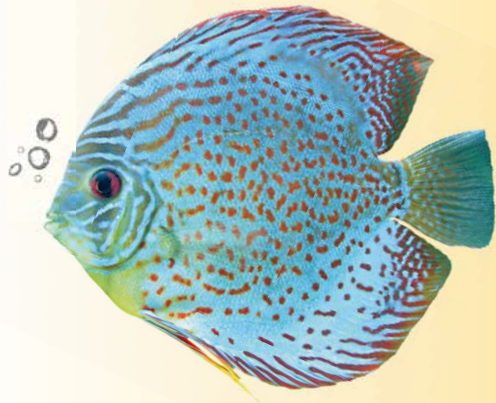
*sera LED lighting for an energy efficient experience close to nature*

Compared to common fluorescent tubes, the modern LEDs not only consume less energy and live longer than every other lamp on the market, but also do not contain toxic quicksilver.

Unlike fluorescent tube lighting, **sera** LEDs do not need to be replaced after a certain operation time, but provide constant, flicker-free light quality and intensity throughout their entire lifetime. Constant light spectrum and performance prevent unwanted algae growth support.

The fully dimmable LED lighting illuminates your aquarium perfectly immediately upon switching on. Due to its high switching capability, it is not sensitive at all concerning being frequently switched on and off.

*Permanent trouble free operation is possible also without extensive cooling due to the low heat development!*





# Light – Basis for a healthy life



Light intensity, light quality and lighting duration are of basic importance for creating a living environment as close to nature as possible in the aquarium, because light and its variations have influence on almost all aspects of life, such as regulation of the circadian rhythm, metabolic processes and reproduction. The correct aquarium light does not only perfectly present your aquarium and its inhabitants, but it also ensures plants as well as coral and anemone species whose zooxanthellae carry out photo synthesis are being supplied with essential light in sufficient intensity and suitable quality (blue and red spectral ranges).

## Lighting intensity

The light intensity is being considerably reduced already at a few centimeters water depth due to absorption. When choosing aquarium lighting, it is therefore important that the light energy is so strong that lighting intensity is still strong enough for undisturbed photo synthesis by the plants even at the bottom of the tank.

## Light quality

Concerning ideal lighting as close to nature as possible, not only the type of light being used but also the spectral composition and the light color are very important. LEDs allow creating light in every light color and spectral composition. The LED products by **sera** therefore make customized solutions for every application purpose (e.g. plant lamps) and taste available.

## Lighting time

Lighting duration is an important factor. Most inhabitants of marine and freshwater aquariums originate from regions with a day length of 8 – 10 hours. It is therefore advisable to choose a lighting duration close to this natural diurnal cycle as to prevent disturbing the circadian rhythm of the animals and plants.



# Light conditions close to nature

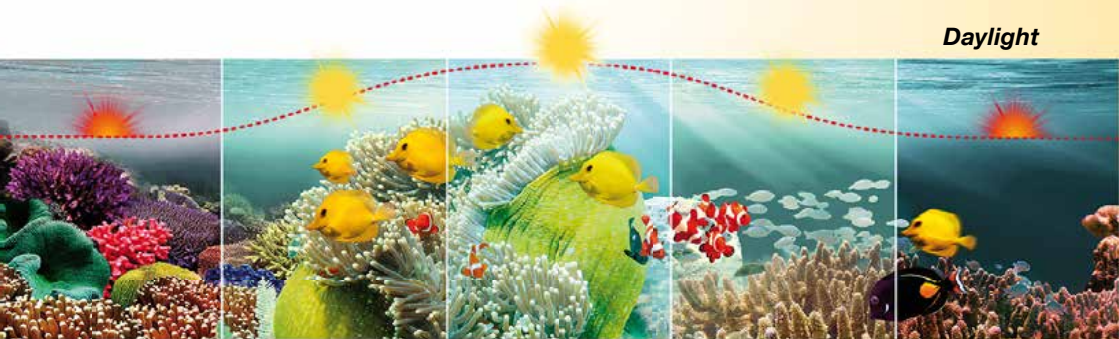
In nature, light conditions do not change from bright sunshine to pitch black night within a second, but change smoothly. Imitating a natural diurnal cycle with slowly changing light conditions is advisable for preventing stress.

The **sera LED X-Change sunrise Tubes** in combination with the **sera LED Digital Dimmer** allow simulating sunrise and sunsets just as easy as cloud simulations with all other **LED X-Change Tubes**. This makes imitating natural diurnal rhythm very easy. The individually programmable dimmer not only allows regulating brightness but at the same time serves as a convenient timer.

Using the dimmer makes longer lasting light intensity reduction easier, which is, for instance, advisable in case of some disease treatments.



**Daylight**



*Example for nature like light scenario with sera LED X-Change System*

# Varied colors – sera LED X-Change Tubes

## Varied colors

The **sera LED X-Change Tubes** allow adjusting your aquarium lighting individually to your requirements.

You can, for instance, support photosynthesis with the **sera LED X-Change Tube plantcolor sunrise** or improve the color contrasts in your aquarium with the **sera LED X-Change Tube neutral brilliant white**.

*The sera LED X-Change Tubes are available in different lengths. They are reliably protected against moisture by the crystal clear glass tube.*



## LED daylight sunrise

- Approx. 6,000 – 8,000 Kelvin
- Allows simulating sunrise and sunset
- Suitable for freshwater aquariums



## LED cool daylight

- Approx. 10,000 – 12,000 Kelvin
- Enhances bluish colors
- Dimmable
- Suitable for freshwater and marine aquariums







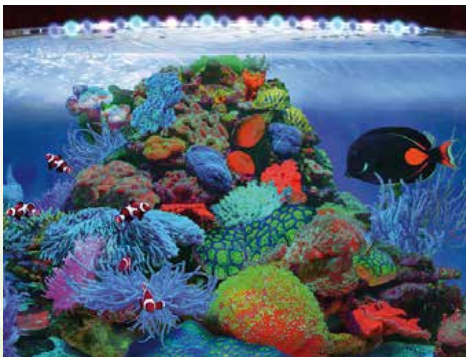
### LED neutral brilliant white

- Approx. 3,850 Kelvin
- Very bright, neutral white light
- Improves color contrasts
- Can be combined with all **sera LED X-Change Tubes** light colors
- Suitable for freshwater and marine aquariums



### LED plantcolor sunrise

- Approx. 2,450 Kelvin
- Supports photosynthesis
- Allows simulating sunrise and sunset
- Suitable for freshwater aquariums



### LED marine blue sunrise

- Approx. 18,000 – 22,000 Kelvin
- Enhances fluorescence effects in marine aquariums
- Suitable as additional lighting in Lake Malawi aquariums or as moon light
- Allows simulating sunrise and sunset
- Suitable for freshwater and marine aquariums



# Switching over to LED lighting is easy

The **sera LED Adapters T5 short, T5, T8** allow you to install the **sera LED X-Change Tubes** into the already existing fluorescent tube fixtures of your aquarium in an uncomplicated way.

The chart shows you at once glance, which length is the correct one for your aquarium.

sera LED X-Change Tube	T8 fluorescent tube	T5 fluorescent tube	T5 fluorescent tube in special size
360	15 W / 45 cm (18 in.)	24 W / 43,8 cm (18 in.)	./.
520	18 W / 60 cm (24 in.)	28 W / 59 cm (24 in.)	24 W / 54,9 cm (21.6 in.)
660	25 W / 75 cm (30 in.)	35 W / 74,2 cm (29.7 in.)	./.
820	30 W / 90 cm (36 in.)	45 W / 89,5 cm (36 in.)	39 W / 84,9 cm (33.4 in.)
965	38 W / 105 cm (42 in.)	54 W / 104,7 cm (42 in.)	./.
1120	36 W / 120 cm (48 in.)	54 W / 120 cm (48 in.)	54 W / 114,9 cm (45.2 in.)





## Solutions for open aquariums

Open aquariums can be equipped with **sera LED X-Change System** lighting without any problems when using the **sera LED X-Change Tube** holders.

### LED Tube Holder Clear

The **sera LED Tube Holder Clear** not only allow attaching the **sera LED X-Change Tubes** on the aquarium safely and elegantly, but virtually let them float above your aquarium. Due to the transparent, beautifully bent acrylic glass, the holders perfectly fit in the entire appeal and do not draw the attention off the main attraction, the aquarium.



### LED fiXture

The slim overtank luminaire **sera LED fiXture** allows installing several **sera LED X-Change Tubes** above an open aquarium very easily. Due to the adjustable standing feet it is not only suitable for aquariums with standard dimensions, but also for shorter and longer aquariums. Due to the galvanically protected aluminum, the **sera LED fiXture** can also be used on top of open marine aquariums.



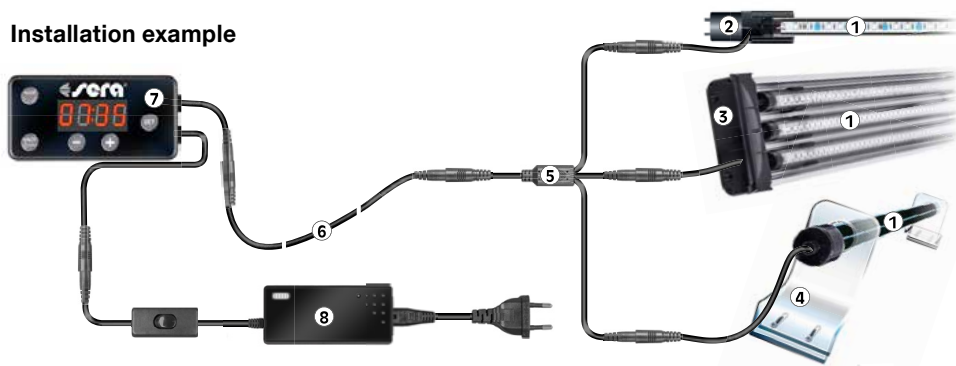
# The sera LED X-Change System

Due to the combinable **sera LED X-Change Tubes** and the modular system setup, the **sera LED X-Change System** provides you with an innovative aquarium lighting that can be adjusted to your personal requirements. Switching to the modern LED lighting is entirely uncomplicated with the **sera LED X-Change System**. Simply replace your old fluorescent tube with the chosen **sera LED X-Change Tube** using the suitable **sera LED Adapter**,

and connect your new, modern aquarium lighting to the mains supply using a **sera LED ballast**.

You now have modern aquarium lighting with little effort and without replacing the existing aquarium hood!

## Installation example



- ① X-Change Tube
- ② T5 short / T5 / T8 Adapter
- ③ fiXture
- ④ Tube Holder Clear
- ⑤ Triple Cable
- ⑥ Extension Cable
- ⑦ Digital Dimmer
- ⑧ Ballast



## Individual lighting for sera LED aquariums and LED lamps

The **sera LED Chips** turn your aquarium into a perfectly presented underwater world. There are 11 different LED Chips with various effects available for you, which can be installed very easily. Remove the protecting cover of the corresponding hood to do so and replace the current LED Chip with the new one.

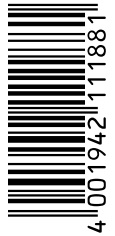


### sera LED Chips

	<b>daylight</b>	Daylight with intense blue spectrum (cool white)
	<b>tropic sun</b>	Sun warm daylight for freshwater aquariums
	<b>blue light</b>	Blue reef or moon light for marine aquariums
	<b>ultra blue</b>	Blue reef light with UV-A for marine aquariums
	<b>azur</b>	Cold daylight for freshwater aquariums
	<b>cardinal red</b>	Reddish warm daylight for freshwater aquariums
	<b>plantcolor bright</b>	Bright daylight with strong pink component for enhancing plant growth
	<b>plantcolor dual peak</b>	Intense growth light for plants and corals
	<b>red vision</b>	Pure red light as an accent and as nocturnal observation light
	<b>orange sunset</b>	Pure orange light as an accent and as nocturnal observation light
	<b>UV-A</b>	Pure UV-A light for enhancing fluorescence



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For natural aquariums

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