

“The enlightenment of illumination”

The illumination of panoramic photographs in co-operation with the panoramic light “Majak”.

Have you ever tried to photograph a panorama inside a building? You will notice it will bring complications along concerning an equally even illumination of the area that will be on the picture. The main problem is to put the light in a position where the efficiency is high, but one does not have the actual light source itself in the photograph taken.

The traditional way: several single-lamps

Probably the easiest way of illumination, where the sum of several lamps lighten up the area that will be photographed. The advantage of this solution is a comparative small amount of money that is needed because of using all the available household lamps. Unfortunately only in rare cases can a satisfying evenly illumination be achieved. Another problem is to hide all the lamps so that they will not appear on the panoramic picture. It takes a lot of patience, knowledge and skills by positioning the lamps in order to achieve an acceptable result. Eventually it takes a great expense of electricity to run all the lights who also produce a large amount of heat.

One step forward: rotating fluorescents

Light sources with fluorescents have a good efficiency. A low power consumption produces a respectable light and develops minimal heat. Therefore they can remain switched on much longer, without letting the photographer break into a sweat. For example the rotating fluorescent “Panolight” (by Shotmedia) consists of two fluorescent lamps arranged in form of a two-armed tree, where the panoramic camera is put in between, in centre, of the two light sources. The disadvantage is the enormous size of the entire system which makes it not very handy and impractical to work with and influences the stability in a negative way.

Daylight-like: powerful photo lamps

The company Marc Karies produces another rotating version with 2 x 2kW light-power, also consisting of a traverse with two reflectors. Even if the light output is enormous compared to other solutions, once again there is a very high production of heat which is unnecessary. Considering the high expense of money for the purchase, it is not made for occasionally users.

Innovation through light-circuit-cable?

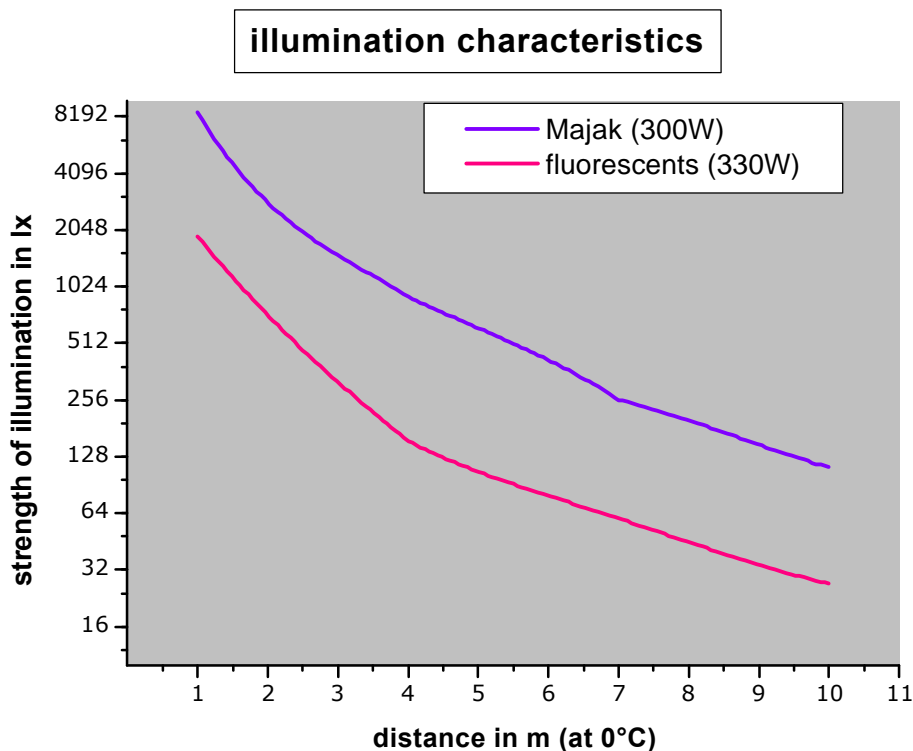
The company KST develops a rotating light system, which transports cold light through a light-circuit-cable to the camera where it is formed into a ray of light through a rotating cylindrical optic. An interesting solution, but not powerful enough for most applications yet.

Sometimes less is more

A lighting system for panoramic photographs should follow the rotation of the camera exactly. Therefore only a small vertical slit of light would have to be illuminated, following simultaneously the movement of the vertical line that is photographed by the camera. This means there is less area to illuminate, less electricity needed and only a small production of heat.

An innovative solution and its technical data

The panoramic light “Majak” has been developed specifically for panoramic cameras and is a special light system for digital and analogous panoramic pictures in co-operation with rotating cameras, working with linear sensor technique and a disposal of a drive assembly for the lighting system. The lamp is manufactured for other cameras working with linear sensor technique as well. For example for any linear movement between line-camera and object or turntable-photographs, respectively. A comparison between a fluorescent lighting system and “Majak” with identical electrical power output reveals the superiority of the illumination.



General construction of “Majak”

First of all there is a fuel rod in the middle of a static pillar. Around this pillar there is a cylindrical-parabolic reflector, who rotates very easily, because of two ball bearings inside. While the reflector is rotating, the vertical, bundled ray of light is moving around the point of view, that means there is no more shifting the lamp nor the cable to a different spot during the whole process. The panoramic camera will be installed on a stationary platform on the upper side of the lamp. The simultaneously rotating movement is granted throughout a coupling by an adjustable bow fixed between lamp and camera. This makes the “Majak” able to work in combination with panoramic cameras of any factory and type. Because of the smooth and easy rotation movement of the reflector, there are no disturbances of the actual camera movement.

Corresponding to the basic principle of the camera during the process of photographing, there is only one vertical slit recorded with the linear sensor at a time. Therefore there is no need for a complete illumination of the whole area at once. That is the idea of the lighting system “Majak” who illuminates only the vertical slit that is required at the time when the linear sensor is taking the picture. To provide the light, “Majak” uses only one halogen light tube and bundles the light in a cylindrical-parabolic mirror, who is placed around the tube and beams the bundled ray of light in form of a bright vertical slit. Because of this technique the power output of a comparatively small tube is bright enough to achieve a very high efficiency even on large surfaces.

According to the technical details and small dimensions of “Majak”, the lighting system is very practical, easy to handle and transportable.

The panoramic lighting system is manufactured in two different versions:



Majak I with stationary reflector

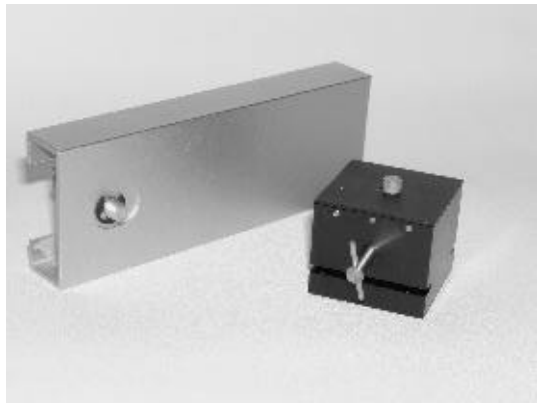
Majak I disposes a stationary reflector fixed stiffly on the middle console in order to be installed on top of a rotating camera. This is specifically designed to fit with all cameras, who have an equipment for a tripod-thread on the upper side of the camera and a reasonable stable drive assembly for taking along the cable of the power supply.

An included tripod-carrier realises the universal adjustment on the different camera circumstances.

The tripod-carrier consists of two components, a shift-able bar and pedestal. Guaranteeing an direct installation of virtually every panoramic camera. Even if the place of installation is not in the middle towards

the lens-axes of the camera, using the slide-able bar on the tripod-carrier it can be arrested into the right position. The bar is fixed on the bottom side of the lamp and the pedestal on top of the camera. By sliding the bar along the pedestal, the distance between camera-

installation-point and "Majak I" can vary, meanwhile the angle has to be adjusted on the fixations. In order to arrest the bar properly, an eccentric-clamp provides the fastening. The fastening on the camera can be done by using a coin for the screw. To not get the camera involved into unnecessary heat production from the lamp, "Majak I" should be slit into the direction of the photographed area as far as possible. The centre of the light source should be above the optical lens-axes, to avoid a possible parallax. The tripod-pedestal is constructed with a big rest-surface on purpose, in order to transmit appearing leverage into the camera-body surface during the photographing. If the given space around the thread hole is not big enough, a normal tripod-screw can be put in between and make it fit.



The photograph on the right side shows a possible construction, combining "Majak I" and a panoramic camera (company Seitz "Roundshot 28/220") As seen in the picture, the bar is installed underneath the lamp, while the pedestal is fixed through the tripod-thread on top of the camera. Now the lighting system can be slit back and forth to bring it into the right position.



[Majak II with rotating reflector](#)

Majak II applies a rotate-able reflector with two ball-bearings on a stationary middle-console in the centre of the lamp. The system in this design is under patented law and can be used in combination with any panoramic cameras, who are not cable-connected to other devices. Especially in combination with the electronic panoramic-cameras of the product-line "KAR-LINE", but also for cameras who are similar in construction and design. The greatest advantage of "Majak II" is the easy and smooth way the reflector is rotating without taking care of any disturbing cables who have to follow the motion of the camera. Because of that, the entire camera technique is exonerated and the handling of the power supply cable becomes very simple. If the construction of your camera allows you to use this lighting system, we would recommend to privilege this version.

Technical data:

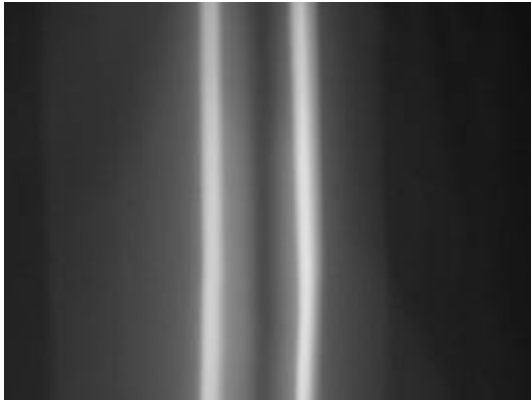
	Majak I	Majak II
power output		300 W
voltage input (different voltage – types available)		230 V
measurements l x w x h	200 x 95 x 235 mm³	260 x 95 x 235 mm³
weight	1,0 kg	1,1 kg

„Learning by doing“ – the practical operation

How simple the use and handling of “Majak II” in co-operation with the panoramic camera “KARLINE” really is, gets noticeable already by the very first assembly. The installation of the lamp is done right on the tripod through the $\frac{1}{4}$ thread-hole on the bottom of the case of the lamp. The camera is put on top of the lighting system and connected through a tripod-screw that is already manufactured as part of “Majak II”. There is a “taking-along”-shackle in order to couple the rotating reflector of the lamp with the camera, so that the movement of the camera and the projected slit of light are simultaneously. Since there is only a small slit of illumination projected when the lamp is turned on, the vertical light line may have to be oriented towards the linear sensor of the camera. This may be done by a test run of the camera. The starting angle of the photographed line should match the projected slit of light.



What kind of problems may occur?



In order to use the vertical bundled ray of light most efficiently, the photographed object should have a certain distance to the panoramic light. Because of the parabolic mirror of “Majak” there might be additional disturbing light lines projected, by putting the lamp too close to the object. If these slits are reflected very close to each other, which they are when having a small distance, it makes the orientation-process between camera and ray of light more complicated.



Another issue are undesirable shades from objects, who are right in front of the camera. Since not every object that is not supposed to be on the picture can be removed, there are two options to let those shadows disappear. If doable, the camera position should be moved to a different spot. Otherwise the use of an additional light source, right behind the object that causes the shade or the use of a regular ceiling lamp respectively, should improve the illumination. The most elegant solution might be the combination of “Majak I” on top of the camera and “Majak II” underneath the camera.

... What about the flicker-effect?

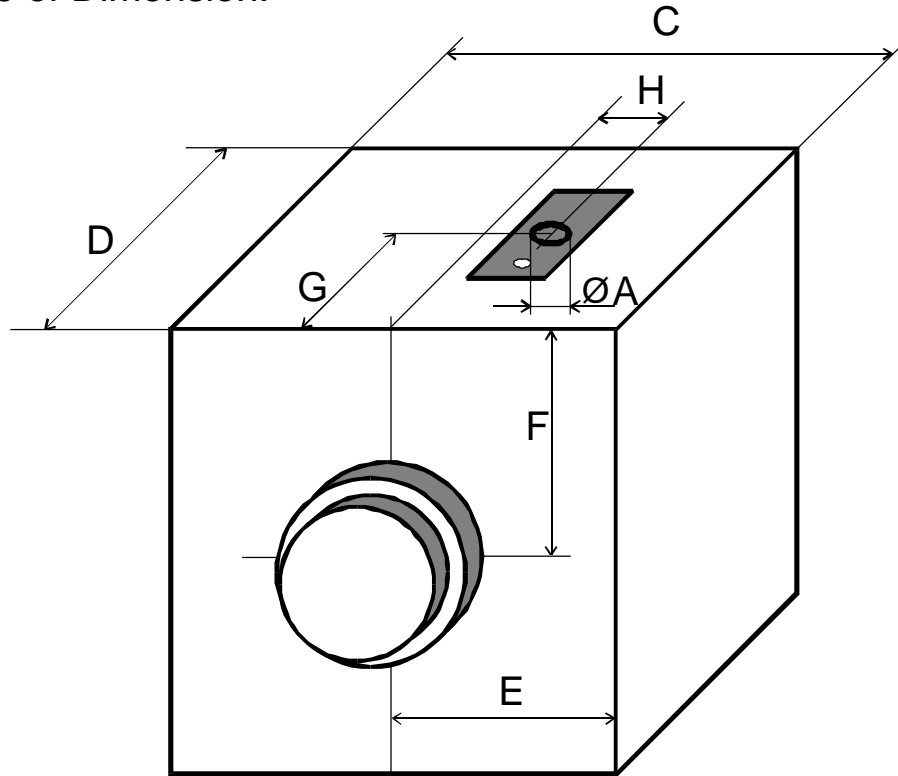
Light sources who work with alternating current, produce a light modulation with doubled frequency. Meaning a 50 Hz alternating current applies a modulation of the light output of 100 Hz frequency or 1/100 s respectively. This has, especially working with fluorescent lamps, the effect of flicker, an unsteady burning of the light, caused through interference between photographed picture and exposure time. To avoid that, most of the time fluorescent lamps operate with a higher frequency. On the other hand, halogen light tubes with a high energy output such as “Majak” applies one, have a heat-inertia that eliminates this effect right from the beginning. If there are still some sort of flicker-effects appearing because of additional lamps, we recommend to change the camera setting to a longer exposure time, for example 1/30 s or increasing. Another solution to eliminate the flicker effect, is a camera-setting called average-process, where the linear sensor takes every single line in a photograph multiple times and processes an average which takes care of the flicker-affected sequences. This setting is provided in the panoramic camera “KARLINE” as well.



Suitable for every camera

In order to find out if your camera fits in combination with "Majak" or can be adjusted, we just need you to fill in the respective measurements in the following sketch. We instantly will inform you about a possible adjustment of the lamp to your camera.

Beispiel für eine Maßskizze:
Example of Dimension:



Draufsicht / Top View

