

## Cold-light sources



The CV-KLQ-150 is a high quality, dimmable, 150 watt halogen cold light source. With dimensions of 205 x 215 x 80 mm this instrument fits in every laboratory. The steel housing is powder coated. The colour temperature is 3,400 Kelvin. The weight is 4,200 grammes. The CV-KLQ-150 is equipped with a fan and overheating protection feature. The intensity of the light is controlled electronically. Naturally it is EMC tested and CE approved. Always reduce the light power to zero and allow the bulb to cool with the fan running before switching off, to increase the service life of the bulb. The average bulb life is approx. 50 - 150 hours.



Use of the CV-KLQ-150-X increases the light power and improves the image contrast. A 50 watt arc lamp with reflector (5000 Kelvin) is used here to obtain daylight quality. The light intensity can be regulated infinitely with a mechanical control. This model is important for illumination with ring light and diffuser or for large working distances with incremental zoom systems. The housing also has a size of only 205 x 215 x 80 mm. The average service life of the bulb is approx. 4,000 hours. The light source should not be switched on and off repeatedly to increase the service life of the bulb.

## LED cold light source



With our CV-KLQ-LED high performance cold light source, we generate light similar to daylight and luminous flux values of 900 lumens at the exit of a flexible light guide with an active diameter of 9 millimetres. Brightness control is possible with an incremental encoder or electronically with an integrated USB, CAN or RS232 interface. The three filter slide positions allow quick change-over between white light from the light source and up to two colour or conversion filters. Various filters, light guides, focussing lenses, holders and a foot

switch are available as accessories. At the moment two models are available for the following light guides: CV-KLQ-LED-9 (with Streppel /Volpi/Photonic mount for light guide dia.) and CV-KLQ-LED-9-S (with Schott Series KL1500-LCD mount for light guide dia.). If you have a light guide with diameter of 10 mm, we will be pleased to check whether we can supply a suitable adapter sleeve).

From Metric 8.09 (February 2012) the LED cold light source can be controlled from the Metric measuring software. The corresponding USB driver is available on the Metric Installations CD (Metric 8.09) and can also be downloaded on our website in the Software • Drivers section. This feature is important if the cold light source is further away from the computer so that the user can easily control it and does not have to adjust the brightness via the exposure time. In addition cold light source fixed settings can be saved to individual lenses or zoom levels. This reduces the time required and guarantees the reproducibility of perfect pictures.

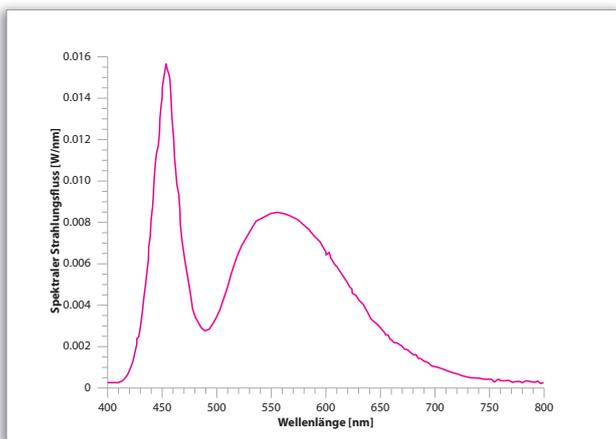
### Advantages in brief:

No noise. Much less heat. Long service life, eliminates continuous bulb changing. Automatic shut-off when light guide is changed is easy on eyes. Saves power in comparison to conventional cold light sources. Controllable via Metric measuring software.

### Technical Data:

- Luminous flux approx. 90 lumens at exit from 9 mm light guide
- Light dot homogeneous and sharply focussed, with peak in centre.
- Standard colour temperature approx 6200 K and CRI approx. 75
- Brightness control in 1 - 5% increments (freely programmable) with incremental encoder.
- Quick adjustment for intensity in 20% increments by pressing knob, possibility of saving intensity settings separately.
- Intensity values can be saved separately (6 storage locations)
- LCD display for intensity and menu guidance
- Extremely quiet fan
- Interfaces for foot switch, USB, RS232 and CAN
- Robust and stable, resistant to chemicals, temperature and scratching
- Two threaded bushings (M4) on housing bottom section for attaching to tables, stands, etc.

- Stackable and full operable in stacked state.
- Filter attachment with two positions for filters and 1 empty position
- Active light guide diameter up to max. 9 mm
- Safety switch-off when light guide is removed
- Internal 100 - 240 V switching power supply without standby feature
- Power cord for non-heating appliances
- Constant current operation
- Service life approx 50.000h with 70% decrease in light output.
- Tested and approved in compliance with CULus, CE approval symbol
- EMC Class B
- Operating voltage, Frequency: 100-240V  $\pm$  10%, 50 - 60 Hz
- Overvoltage category: II
- Power consumption: 80 Watts
- Protection rating: IP 20
- Soiling rate: 2
- Maximum effective active light guide diameter: 9 mm.
- Total luminous flux at light guide exit (9mm length 1,000 mm): 870 Lumens
- Test symbols: CE, CULus
- EMC emission class B



## Double swan neck light guide



A classic shape, familiar to everyone and sometimes indispensable. Many visual inspections are successful only with diffused light at an obtuse angle from two sides. The flexibly adjustable angle of the two light guides allows such precise illumination. The length of the light guide is 600 or 800 mm. Another interesting version is available with one 600 mm long and one 800 mm long light guide. **Ad-**

**vantage:** The light source is usually located next to the microscope making one side

too short for optimal positioning. This version solves this problem. Other special lengths available on request.



## Ring light



Ring lights are unbeatable for providing highly uniform, diffuse illumination. This versions with radiation angle of 10° (light guide length 1,000 and 2,000 mm) can be used for greater working distances. The 35° versions is suitable for short working distances. The inner diameter is 30.5 mm.

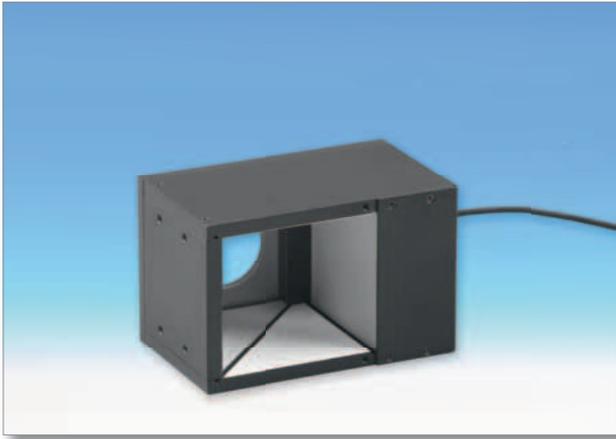
This light guide are available in special lengths on request.

Ring lights are available with a diameter of 60 mm for

special applications. Diffusers are available for both diameters.



## External coaxial illumination

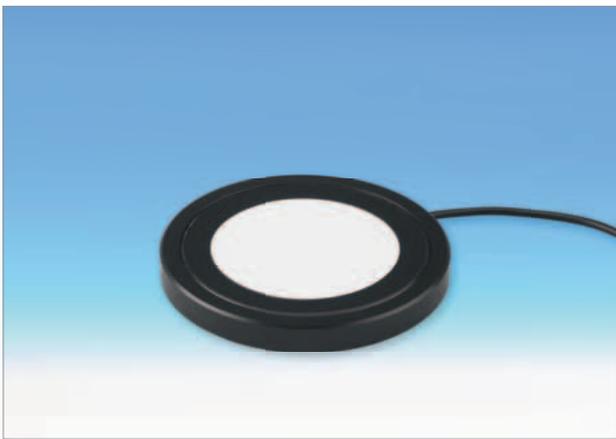


Users are frequently confronted with a problem when coaxial illumination is required, however a large working distance ( $> 70$  mm) is required to obtain a larger field of vision. In such cases it is possible to use external coaxial illumination, allowing reflection-free illumination. Depending on the situation this type of illumination is simply positioned on top of flat material or integrated into the specific stand system using a special mount. These very high

quality illumination units are used with a special power pack. The brightness can be regulated infinitely on the power pack. Special mounts are not included in the price.



## Diffuse bottom light



This diffuse LED bottom light is the ideal and economical solutions for all applications where a parallel bottom light is not required for precise measurement. The round illuminated surface as a diameter of 70 mm and the outer diameter is 95 mm with a plate thickness of 5 mm (approx. 12 mm in area of cable connection). The CV-LED-U fits the CV-ST, CV-B-ST and all KTIO series stands.

This light panel is available with a round POM plate for separate use. The diameter is 110 mm and the overall height 12 mm (see drawing). The light plate is clamped in the bottom plate. This article is supplied with a Profitec universal power pack satisfying the latest EU standard. The light intensity can be regulated with the power pack (max. 20 Volts).

## LED ring light



In any applications LED ring lights are perfectly sufficient for top lighting. The CV-LED-R with its 98 white LED's, arranged at an angle of 15° in three rows, offer perfect illumination quality. The outer diameter is 67 mm and the inner opening 35 mm (see drawing). The set included a power supply with infinite dimming feature.

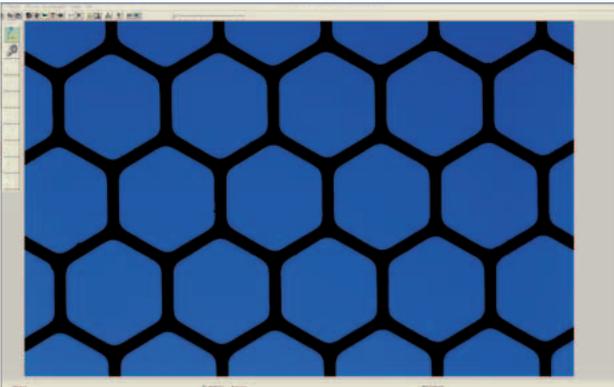
## Parallel bottom light



It is no longer possible to use normal diffuse light to measure the diameter of rotationally symmetrical parts or the pitch on threads and taps, because the lights cannot "bend" around the edges, so that the diameter is indicated as less than it is in reality. Parallel bottom light can be used for such applications, because it guarantees that the light comes straight from below making precise measurement possible. The light from the blue LED (blue = least deflection) is guided

through an optical systems by a semi-translucent mirror and passes through a Fresnel lens which radiates the light upward in parallel. The image quality corresponds to that of a high quality profile projector. The CV-PPL-B illumination unit can be screwed onto the CV-Mini-DF or CV-B-ST stand.

The power pack included with the unit allows fine dimming in addition to standard dimming. If desired, this system is also available in a white or green version. Parallel illumination units have a fixed aperture.



## Telecentric bottom lights



Telecentric illumination is a special form of focussed illumination with high directional characteristics. This application is accomplished almost exclusively using transmitted light. A light source (usually LED) of known, small illumination aperture is positioned in the focal plane of the light's optical system. The result is parallel chief rays. Telecentric lighting is not parallel lighting (defined aperture). This makes it considerably less sensitive to vibration or maladjustment.

Telecentric lights supply a very homogeneous, high contrast illumination of the field of vision. It is always necessary to use it in combination with telecentric lenses, because with an entocentric lens, the light source appears to be located at infinity due to the parallel chief rays. Blue is used primarily as the light source wave length (maximum accuracy) due to the minimal diffraction. The highly directional properties of telecentric lighting allow it to suppress extraneous light well.



### **Application:**

In combination with telecentric lenses wherever bright, high contrast illumination is required and it is necessary to precisely recognize or measure objects, which are difficult to handle optically.

Note: The distinguished preferred direction of the light rays requires exact focussing. For this reason telecentric lights require a solid, adjustable mount. Calibration of the light aperture and image aperture is the primary factor determining the position of the edge location when using telecentric components.