REVEN
SCHAKO Group

REVEN® LED series

Guide

Models REVEN 20 LED / REVEN 40 LED / REVEN 50 LED

As of 10/2023

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Contents

Introduction

Light is essential to life, and by that we normally mean sunlight.
However, the fact is that artificial light has become an integral part of our lives and work and is now a much higher priority for most people. Whether we feel comfortable under artificial light, whether we can actually see everything without straining our eyes or even getting headaches, depends on many factors. The right lighting contributes to health and quality of life. In conclusion, it is not people who should adapt to light, but light that should be adapted to people, depending on the space or activity.

The right lighting is particularly important in commercial kitchens. Aspects such as brightness, contrast and colour should therefore be considered and taken into account during the planning stage. Our lighting management system offers you significant advantages in this regard.
This LED guide therefore briefly explains which factors are important for good lighting and how REVEN® LED lights meet these requirements.

© G

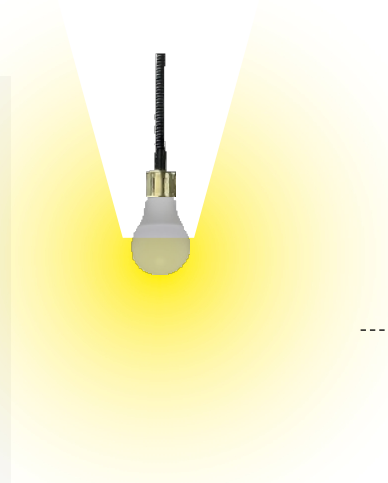
Brightness and illuminance

One might think that brightness is the most important factor for a well-lit kitchen.
However, it is not brightness as such that is decisive, but rather the targeted, uniform and balanced illumination of work-related and adjacent areas.
In commercial kitchens, this applies not only to horizontal work surfaces such as serving counters, cooking areas and sinks, but also to vertical surfaces such as shelves and areas where cooking utensils or crockery and cutlery are stored.

Below you will find information on the subject of brightness and the associated variables that play a role in the planning of lighting systems for commercial kitchens.

By brightness, we mean the total output of the radiation from a light source that is visible to us – also known as luminous flux.

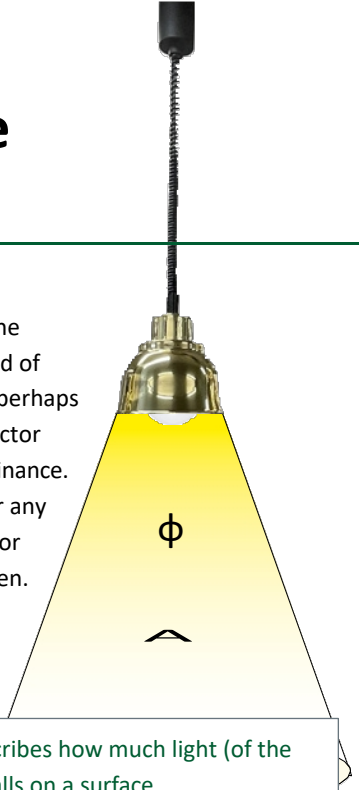
The luminous flux (ϕ) indicates how much light a light source emits in all directions. It is the power emitted per second in the visible light wavelength range and is expressed in lumens (lm).
(Source: https://ledtipps.net)



When planning a lighting system, it is not the total luminous flux that is taken as a basis, but rather the luminous intensity or the distribution of the luminous flux per solid angle.

Luminous intensity (I) is the portion of luminous flux that radiates in a specific direction. It is measured in candelas (cd).
https://licht.de

In order to calculate the illumination of the field of vision in a work area, perhaps the most important factor comes into play: illuminance. It can be calculated for any real or virtual surface or plane within the kitchen.



Illuminance (E) describes how much light (of the luminous flux (ϕ)) falls on a surface.
(A). The unit is expressed in lux (lx) and can be calculated or simply measured with a lux meter.

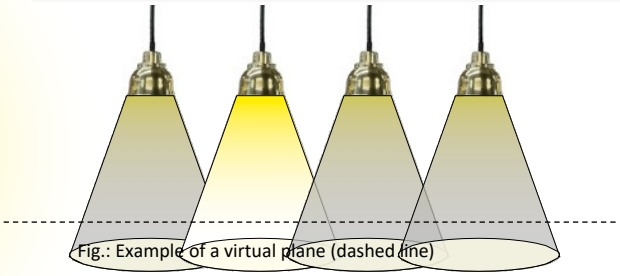
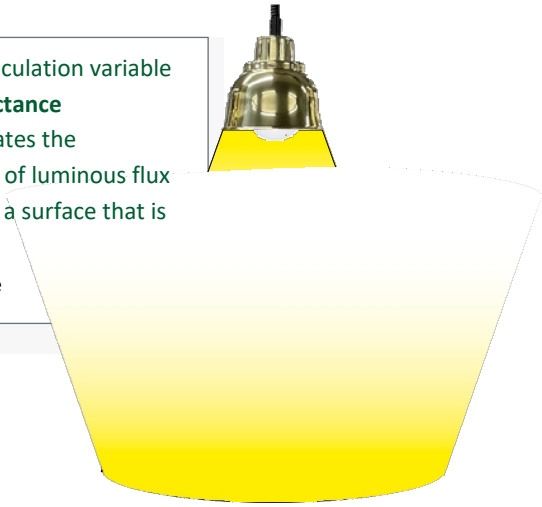


Fig.: Example of a virtual plane (dashed line)

In order to achieve uniform illumination of a surface, the light cones of adjacent luminaires should overlap above the surface.

Another calculation variable is the **reflectance (p)**. It indicates the percentage of luminous flux incident on a surface that is reflected.
https://licht.de



Illuminance for a virtual plane

Illuminance

Lighting for commercial kitchens is clearly defined in the European kitchen ventilation standard EN 16282, parts 2 and 3, and in EN 12464-1:2011, 5.3. For example, EN 12464-1:2011, 5.3 specifies exactly how to calculate the correct dimensioning of an average horizontal illuminance E in lux (lx) relative to the effective plane using the efficiency method in accordance with EN 12665 and EN 12464-1, and how many luminaires are required for this. We can perform such calculations for you and also display them on a computer. See also page 15.

The minimum requirement specified in the standards for new installations is an illuminance of over 500 lux.

These values are so-called maintenance values that must not be fallen below. After all, it can be assumed that the lighting level will decrease over time due to contamination and ageing of luminaires, light sources and rooms.

It is therefore recommended that the illuminance in commercial kitchens be set to 750 lux in the work area. For adjacent areas, DIN EN 12464-1 must be observed in the design, which stipulates a harmonious distribution of brightness, as excessive differences in brightness cause fatigue and disturb well-being.

Kitchens with REVEN® LED luminaires are designed with 750 lux, ensuring that the required 500 lux is always reliably achieved throughout the entire service life!

Fig.: When calculating for a work surface, the adjacent area, the surrounding area (a virtual border around the work surface), must be at least 50 cm. The illuminance for the work surface must be at least 500 lux and for the surrounding area 300 lux.

Light colour / light temperature

Fig.: Kitchen with warm white light

Fig.: Kitchen with neutral white light

Fig.: Kitchen with daylight white light

Another criterion for lighting a commercial kitchen is the light colour.
The light colour can range from low colour temperatures such as warm reddish-yellow-white to high colour temperatures with cool white-bluish light.
Depending on the temperature, it has a stimulating or relaxing effect on people.

The right light colour for the workplace is neutral white with approx. 4000 Kelvin. This light colour offers a good compromise between warm white and daylight white light and is best suited for indirect workplace lighting.

The **light colour** is the intrinsic colour of a light source and is specified by the **colour temperature.**
The measurable unit for this is Kelvin (K).

The three light colours and their effects

Warm white (ww)
below 3300 K tends to be yellow-reddish
Perceived as cosy and comfortable, suitable for relaxation and recreation

Neutral white (nw)
3300 to 5300 K white
creates a functional atmosphere and is suitable as workplace lighting bright and conducive to concentration

Daylight white (tw)
Over 5300 K to approx. 6500 K white-blue light
Most closely resembles daylight, has a stimulating but also technical effect

REVEN® LED lights are manufactured with a light colour of 4000 Kelvin.

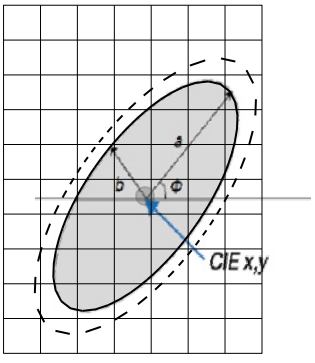
Colour deviation

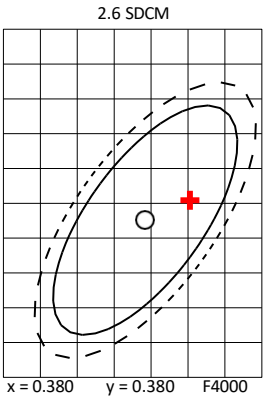
Nowadays, LED chips can be manufactured specifically for a desired light colour. However, due to production factors, they deviate minimally from the desired colour temperature or brightness.
David MacAdam has defined which colour deviations around the ideal target value are acceptable in the form of ellipses that are entered on the CIE standard colour chart (see figure on the right).
In order to keep colour deviations and brightness differences as low as possible, the LED chips in a production series are sorted into containers (bins), with one bin corresponding to one ellipse. The tighter the binning, the higher the quality of the LED chips.

Since 2013, manufacturers within the EU have been obliged to specify the deviation of individual LED chips in terms of colour temperature and brightness on data sheets. The unit for deviations within an ellipse is called SDCM (Standard Deviation of Colour Matching).

The **SDCM levels** describe different degrees of visibility: if the colour differences are within only one level of the MacAdam ellipse, they are not visible to the human eye. Even at two or three levels (3 SDCM), variations are barely noticeable. The higher the SDMC value, the greater the perceptible differences.

REVEN® LED luminaires consist of SAMSUNG LED chips with a MacAdam binning of 3 SDCM.





MacAdam ellipse (T3) for the LED chips used by REVEN					
Step	CIE x	CIE y	θ	a	b
2-step	0.3818	0.3797	53.72	0.00939	0.00402

The CIE standard colour chart describes a colour system defined by the International Commission on Illumination, which represents the perceptible spectral colours using a coordinate system within a horseshoe-shaped curve.

CIE standard colour chart with MacAdam ellipses

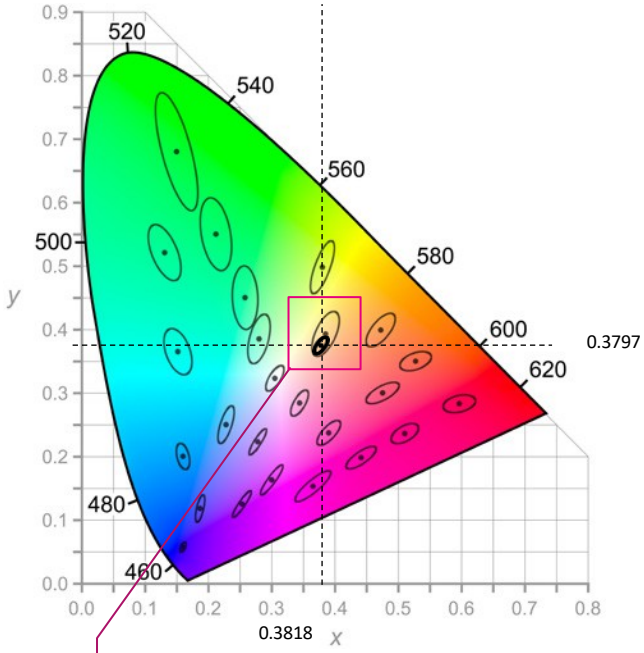


Fig.: CIE standard colour chart, source: Wikipedia https://commons.wikimedia.org/wiki/File:-CIExy1931_MacAdam.png
The small highlighted ellipse has its centre exactly on the colour point or colour temperature of 4000 K.

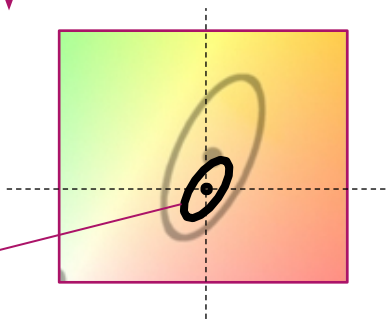


Fig. above: Enlargement of the section of the CIE colour chart with the MacAdams ellipse.

Fig. left and table below: Technical data for the MacAdams ellipse.

Fig. right: The red cross shows the actual colour deviation of the LED chips from the target value (4000 K) within the MacAdam ellipse: 2.6 SDCM (rounded up to 3 SDCM). This means that the colour deviations of the LED chips within a REVEN® LED luminaire are virtually imperceptible.

Colour rendering

In the kitchen, it is particularly important to be able to rely on what you see. This means that food should look exactly as it does in sunlight: strawberries should be red because they reflect the red spectral colour of the sun, and cucumbers should be green because they reflect the green spectral colour. Unlike sunlight, artificial light sources do not always contain all spectral colours.
Even at the same light temperature (K), colours can be reproduced differently in terms of quality.
Whether a colour dominates or is missing from the colour spectrum of the luminaire has the effect shown below.

Fig.: This is a natural colour rendering. The colour spectrum of the luminaire is balanced.

Fig.: Here, the colour rendering of the red food is pale or "incomplete". The colour spectrum of the luminaire lacks sufficient red.

The colour rendering index (Ra) indicates how naturally a colour is reproduced.
The lower the Ra value, the poorer the colours of the illuminated object are reproduced.

The **colour rendering index** indicates how natural the colours of objects and surroundings appear under a light source compared to sunlight (100 Ra). Values are given from 1–100 Ra (general reference index) or CRI (colour rendering index).

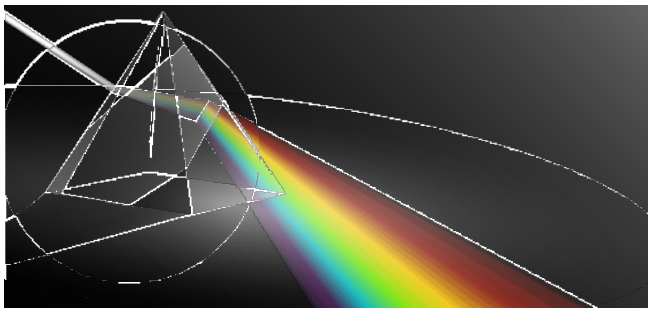


Fig.: You cannot tell which colours the sun combines just by looking at it. Only with the help of a prism (or rainbow) can you see the colour spectrum contained in sunlight.
Similarly, you cannot tell which colours an LED light combines just by looking at it. Only when you look at objects can you see which colours are missing.

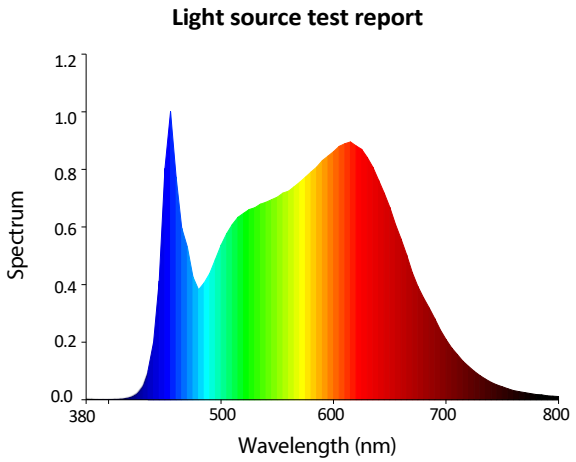


Fig.: Colour rendering of a REVEN® LED luminaire: 93.7 Ra at 4000 K

REVEN® LED luminaires have (according to the current test protocol)
) have a colour rendering index of 93.7 Ra.

Examples of different light sources Sunlight:
100 Ra
Incandescent lamps: 100 Ra
LED lamps: 60–98 Ra
Fluorescent tubes: 80 – 90 Ra

Luminous efficacy

Finally, there is the question of how expensive an LED light is to use, or how much light I get for how much energy. Conventional incandescent bulbs were very inefficient in this respect. They converted only about five per cent of the electricity into light; the rest was heat. Halogen bulbs generate their light somewhat more economically. To compare different light sources, the amount of light or brightness produced when using 1 watt is specified.
The higher this value, the more efficient the light source.

The **luminous efficacy** indicates how much energy must be expended for a specific luminous flux and is expressed in lumens per watt (lm/W).

REVEN® LED luminaires have a luminous efficacy of 185 lm/W.

Examples of the luminous efficacy of different light sources:

Incandescent lamp 12 lm/W

Halogen lamp 25 lm/W

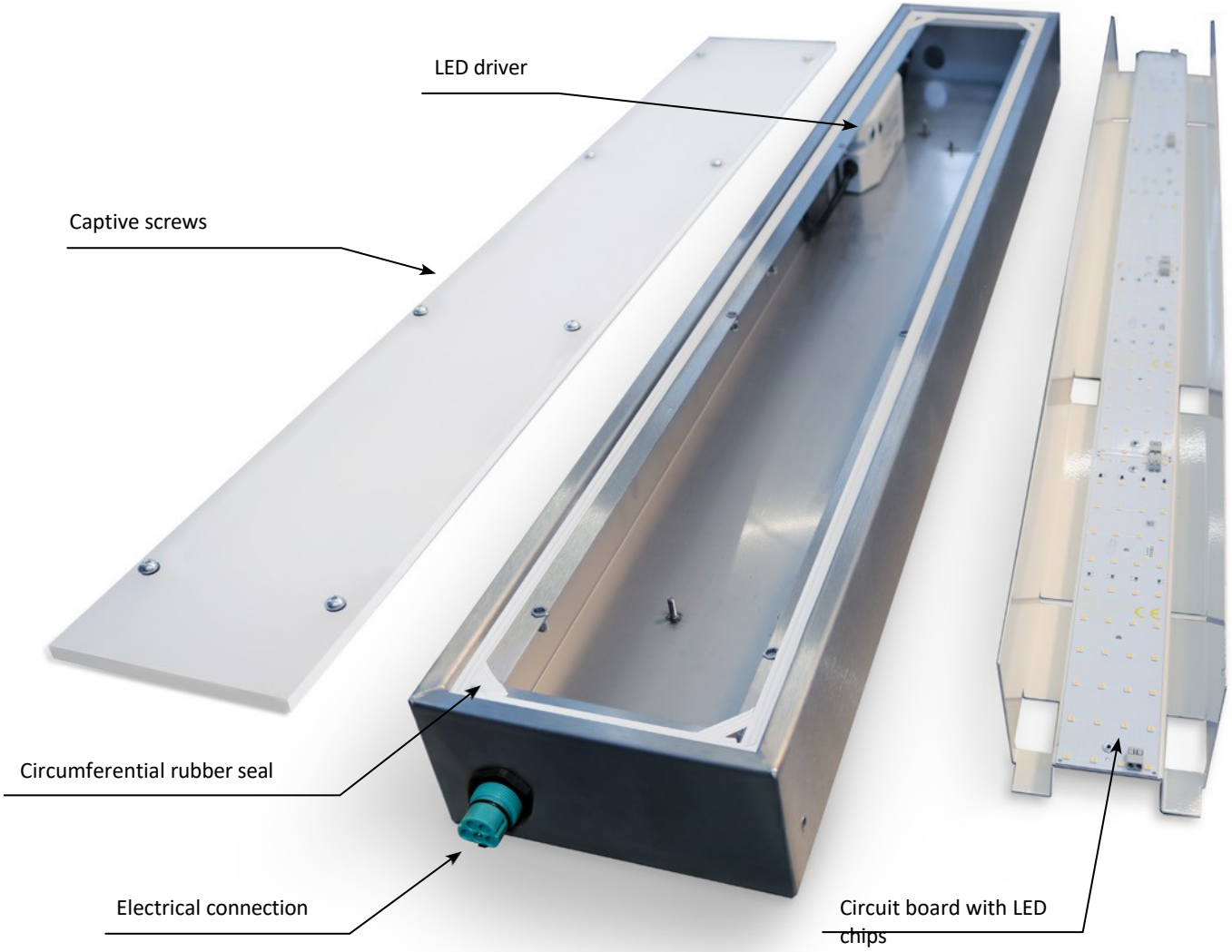
Energy-saving lamp 86 lm/W

Fluorescent tube 110 lm/W

REVEN® LED light 185 lm/W

Structure of REVEN® LED luminaires

Structure of a REVEN® LED luminaire



Cover:
The cover is made of PLEXIGLAS® with a satin finish on both sides, which is resistant to signs of wear. It also provides pleasant indirect lighting.

Housing:
The entire housing is made of 1.4301 stainless steel. Production is carried out in accordance with the requirements of the German Stainless Steel Association (Warenzeichenverband Edelstahl Rostfrei e.V.).

Interior mirror:
The heat sink is made of a heat-conductive aluminium alloy, ensuring optimum heat dissipation from the circuit boards. At the same time, the shiny inner surface serves to reflect and concentrate the light.

Information on the production of REVEN® LED lights: https://reven.link/ledm

REVEN® LED kitchen lights Made in Baden-Württemberg

Cover with high break resistance

The cover of REVEN® LED lights

The cover of REVEN® LED lights is made of PLEXIGLAS® optimised for lighting. A special process is used to satinise the surface on both sides, making it resistant to fingerprints and signs of wear. It feels velvety and has a warm, soft appearance. The translucency of the material creates an attractive interplay with the light.

Fig.: Breaking strength test using a 5 kg hammer on the weakest part of the housing, the PLEXIGLAS® cover.

Quality features

- Excellent light transmission (70%) and brilliance
- Indirect light distribution, low glare factor
- High break resistance and surface hardness
- 11 times more break-resistant than glass
- Low weight, half as heavy as glass
- Temperature resistant up to approx. 80 °C
- Very finely satin-finished on both sides
- Insensitive to signs of wear
- UV-resistant and UV-absorbing
- Weather resistance
- No yellowing
- High durability
- 100% recyclable

High break resistance

REVEN® LED PLEXIGLAS® has been deliberately chosen in a thicker version, which, among other things, results in high break resistance. With an IK impact resistance rating of IK09, the cover is 11 times more break-resistant than glass.

The IK impact resistance test class is part of EN 50295:98 (European standard for enclosures). How to perform a test is described in EN 50102.

The IK impact resistance rating is a measure of a housing's resistance to impact. It indicates how impact-resistant, break-resistant or even shatterproof a housing is.
IK09 means that the enclosure and cover can withstand a 5 kg hammer from a distance of 20 cm without damage.

The **IK impact resistance rating** (IK0–IK10) indicates how much impact energy in joules a housing can withstand from a defined distance, measured with a hammer blow.

With IK09, the housing of a REVEN® LED luminaire is 11 times more break-resistant than glass.

Dustproof and protected against water jets

Kitchen luminaires have to withstand a lot, especially in large kitchens and sculleries: grease, cooking fumes and, above all, large amounts of high-temperature water vapour. Moisture must not be allowed to penetrate the luminaires, even when kitchen ceilings and extractor hoods are cleaned in accordance with specific hygiene regulations.
Any water vapour that enters would have fatal consequences for the functionality and luminosity of LED lights.

REVEN® LED lights are TÜV Rheinland-certified damp-proof lights with IP65 protection, meaning they are protected against contact, dust ingress and water jets.

IP65 (International Protection) is the rating for **the protection class** of an electrical device such as LED lights: The first digit "6" indicates that the lights are dustproof. The second digit "5" also certifies water jet resistance.

REVEN® LED luminaires are damp-proof luminaires with protection class IP65 and are therefore dust-tight and protected against water jets.

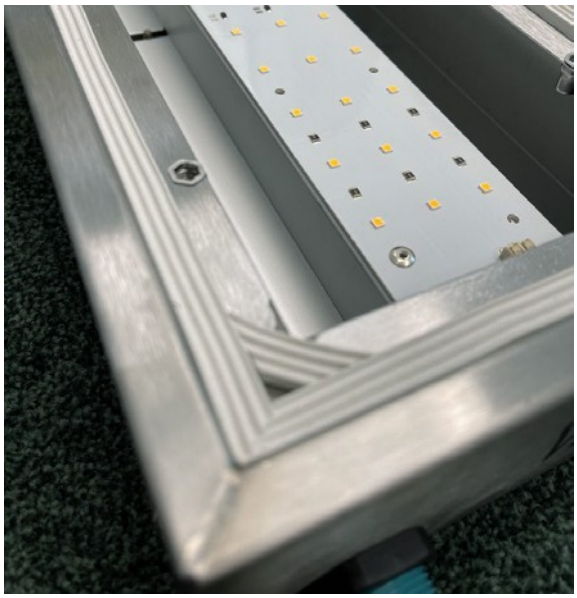


Fig.: High-quality rubber seals on the edges and screws ensure that neither dust nor moisture can get inside the luminaires.

Fig.: The housing is made of 1.4301 stainless steel. The edges are welded to be watertight.

LED drivers for good performance

Unlike the good old incandescent bulb, not all light bulbs could be powered directly with 230 V mains voltage in the past. Conventional 12 V halogen lamps, for example, had a simple transformer that generated the desired 12 V operating voltage from the 230 V mains voltage. Fluorescent tubes, on the other hand, only need a simple capacitor to obtain the correct operating voltage. LED lights are much more complex in design than the old light sources.

An LED driver is an electronic circuit that generates a constant output current from the supply voltage. This is used to control the LED chips. In electrical engineering, this circuit is often referred to as a constant current source.

LED chips are characterised by a current and voltage characteristic curve and must be operated at their correct operating point. Otherwise, fluctuating brightness and poor efficiency would result. To ensure all this, LED chips rely on a constant current source in the form of an LED driver.

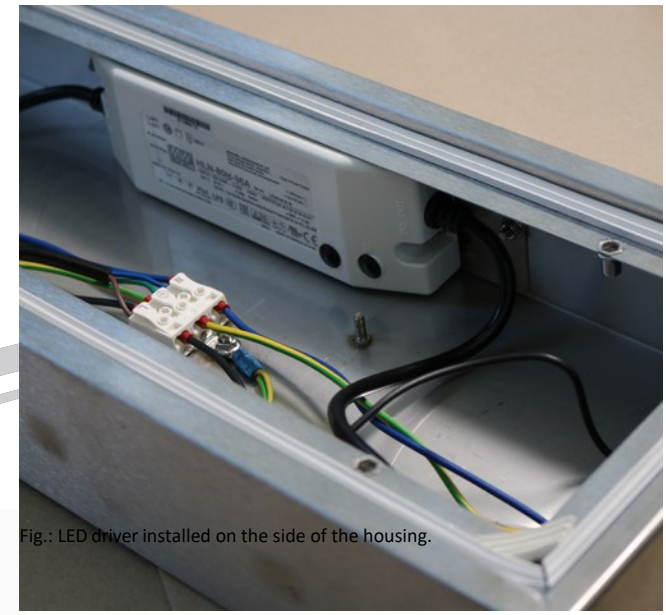


Fig.: LED driver installed on the side of the housing.

REVEN® LED luminaires use LED drivers from MEAN WELL in a protected plastic housing with ~230 V input voltage.

Emergency lighting

A power failure in a commercial kitchen is undesirable, but conceivable.
If the kitchen is located indoors and has no windows, this can have unpredictable consequences, especially when cutting or frying in hot fat. To ensure that there is still sufficient light in this emergency, REVEN® LED lights can be equipped with emergency lighting. Accidents are avoided and the way outside can be found quickly.

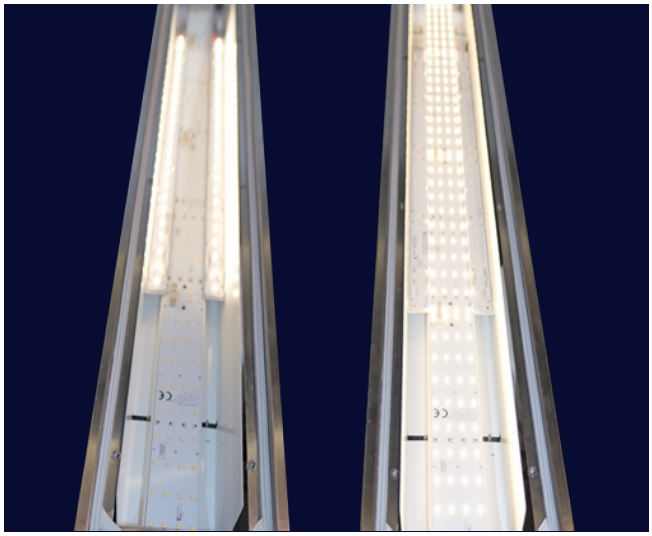


Fig.: On the right, you can see the LED chips on the main circuit boards lighting up. On the left, the LED chips on the additional circuit boards are lighting up.

Narrow additional circuit boards attached to the side provide emergency or safety lighting and only come into use when the power to the main circuit board is unintentionally interrupted. Thanks to the built-in digital module with IP function (Internet Protocol), it is possible to immediately see which emergency lights are on or off in the building network.

Fig.: The interior mirror has enough space for narrow circuit boards that provide emergency lighting.

Emergency lighting is now considered a generic term for mains-independent lighting. It switches on automatically when the mains voltage fails or drops. A distinction is made between **safety lighting** (prevention of accidents, identification of escape routes) and **replacement lighting** (enabling work to continue).

REVEN® LED luminaires are available with integrated emergency or safety lighting on request.

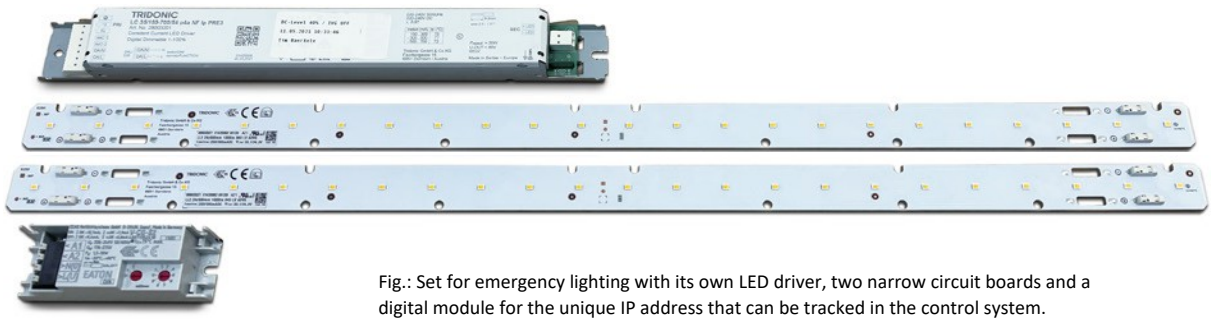


Fig.: Set for emergency lighting with its own LED driver, two narrow circuit boards and a digital module for the unique IP address that can be tracked in the control system.

Planning – Installation – Conversion

Fig.: Visualisation of lighting planning

Lighting calculation according to EU standard

You are welcome to contact us for a light calculation (in accordance with EN 12464-1:2011, 5.3) in advance of a project or retrofit. With the help of 3D design systems, we can visualise the results of a new plan or retrofit in great detail.

Installation

During installation, we ensure that luminaires in ventilation ceilings and kitchen hoods are integrated flush with the surface in accordance with EN 12464-1:2011, 5.3. Surface-mounted luminaires are not permitted in kitchen hoods. Light switches or buttons and control panels, if attached directly to the hood, must be flush and hygienically sealed. The connection cables must not be routed through aerosol collection devices.

Savings through retrofitting

If 50 old luminaires with fluorescent tubes are replaced in a commercial kitchen, the cost of replacing them with modern REVEN® LED luminaires will be recouped after 2.5 years. Electricity costs can be reduced by around 50–70% compared to fluorescent tubes. The conversion pays for itself thanks to maintenance-free operation over many years. In 5 years of operation, savings of up to €20,000 can be achieved with a larger ventilation ceiling!

Please note that when retrofitting kitchen ceilings, any existing grandfathering rights will be lost. Ventilation ceilings and kitchen hoods must then comply with the new DIN EN 16282 standard for kitchen ventilation – and not just in terms of lighting.

With REVEN, you are on the safe side when it comes to planning, installation and retrofitting.

Control and switching

Area of application

The luminaires are not approved for use in potentially explosive areas!

General safety instructions

The luminaires are approved for an ambient temperature of ta = 0 °C to 50 °C.
If these temperatures are exceeded or not reached, appropriate temperature monitoring must ensure that the luminaires are switched off.

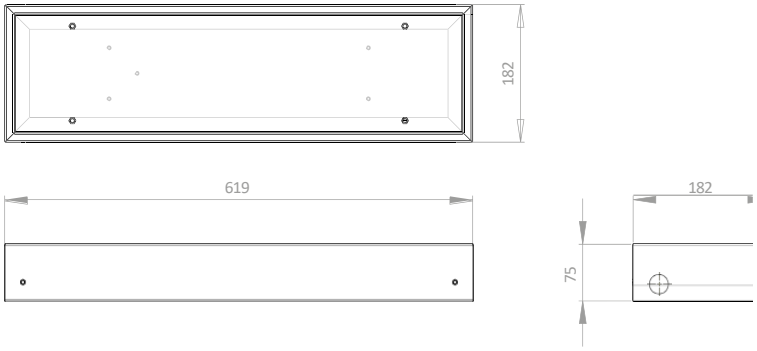
Only use the luminaire for its approved purpose.
Incorrect or unauthorised use will invalidate our warranty.

Connection and control options

REVEN® LED luminaires can be individually integrated into numerous light management systems using optional extension components. The simplest method is to operate them via a conventional 230 V light switch. However, it is also possible to control the luminaires via lighting control systems such as analogue 1-10V, DMX, PushDim or DALI technology* and many more.

*We offer DALI as an optional accessory.
On request, we can help you determine which of the various control options is right for your needs.

Technical data

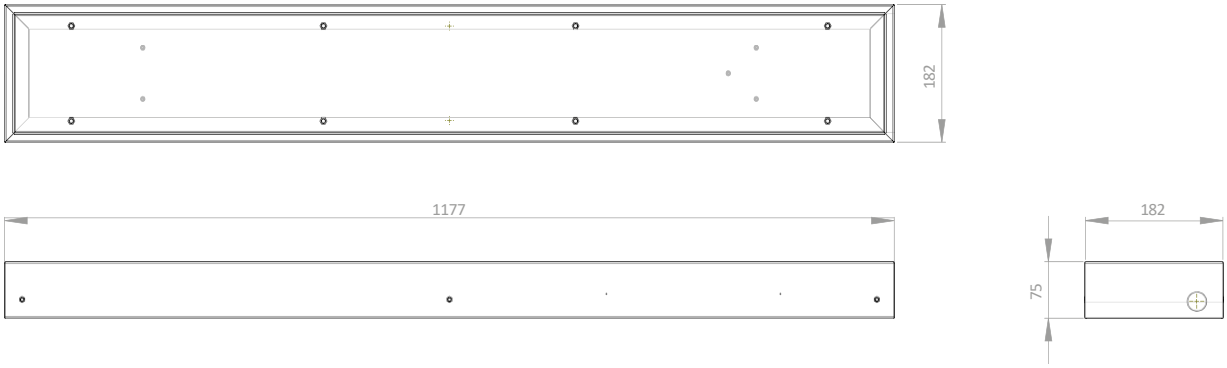


Technical data – REVEN 20 LED

Power consumption	20 watts
Current consumption at 230 V AC	0.54 A
Luminous flux	approx. 1,900 lm
Driver	36 VDC / 80 watts
Light colour	4,000 K
Colour rendering index	93.7 Ra
Protection class	IP65
Cover	PMMA, in accordance with food industry regulations
Nominal voltage	approx. 25–50 V
Frequency	50–60 Hz
Certificate	EC Declaration of Conformity, CE marking
Lamp dimensions (L x W x H)	617 mm x 182 mm x 70 mm
Input	Wieland RST2015 plug
Output	Wieland RST2015 socket
Loop-through connection	Yes
Connection assignment	Colour coding turquoise blue L: 230 V L N: N PE: PE
Optional accessories	- DALI - Emergency lighting

The luminaires are approved for an ambient temperature of ta = 0 °C to 50 °C. If these temperatures are exceeded or not reached, appropriate temperature monitoring must ensure that the luminaires are switched off.

Technical data

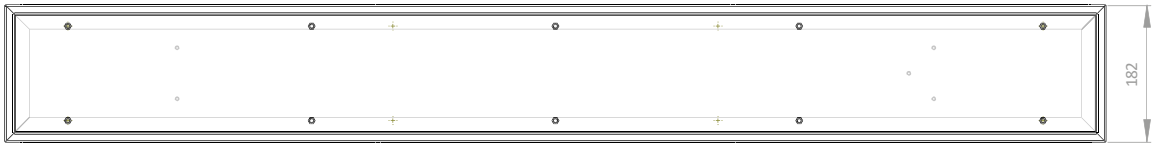


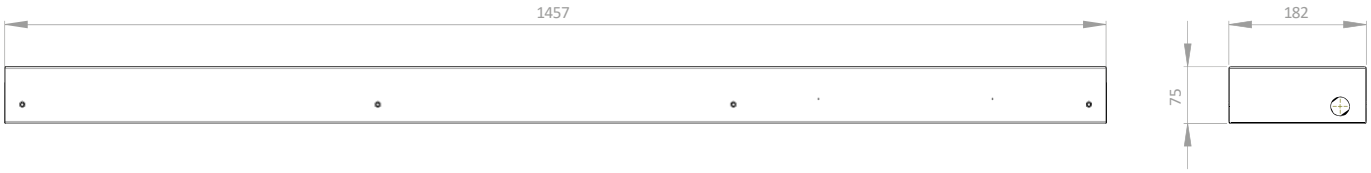
Technical data – REVEN 40 LED

Power consumption	40 watts
Current consumption at 230 V AC	1.0 A
Luminous flux	approx. 3,800 lm
Driver	36 VDC / 80 watts
Light colour	4,000 K
Colour rendering index	93.7 Ra
Protection class	IP65
Cover	PMMA, in accordance with food industry regulations
Nominal voltage	approx. 25–50 V
Frequency	50–60 Hz
Certificate	EC Declaration of Conformity, CE marking
Lamp dimensions (L x W x H)	1177 mm x 182 mm x 70 mm
Input	Wieland RST2015 plug
Output	Wieland RST2015 socket
Loop-through connection	Yes
Connection assignment	Colour coding turquoise blue L: 230 V L N: N PE: PE
Optional accessories	- DALI - Emergency lighting

The luminaires are approved for an ambient temperature of ta = 0 °C to 50 °C. If these temperatures are exceeded or not reached, appropriate temperature monitoring must ensure that the luminaires are switched off.

Technical data





Technical data – REVEN 50 LED

Power consumption	50 watts
Current consumption at 230 V AC	1.4 A
Luminous flux	approx. 4,800 lm
Driver	36 VDC / 80 watts
Light colour	4,000 K
Colour rendering index	93.7 Ra
Protection class	IP65
Cover	PMMA, in accordance with food industry regulations
Nominal voltage	approx. 25–50 V
Frequency	50–60 Hz
Certificate	EC Declaration of Conformity, CE marking
Lamp dimensions (L x W x H)	1457 mm x 182 mm x 70 mm
Input	Wieland RST2015 plug
Output	Wieland RST2015 socket
Loop-through connection	Yes
Connection assignment	Colour coding turquoise blue L: 230 V L N: N PE: PE
Optional accessories	- DALI - Emergency lighting

The luminaires are approved for an ambient temperature of ta = 0 °C to 50 °C. If these temperatures are exceeded or not reached, appropriate temperature monitoring must ensure that the luminaires are switched off.

Criteria for thermal testing

We ensure that the heating of our REVEN® LED luminaires is very low over time in order to guarantee a long service life for the luminaires.

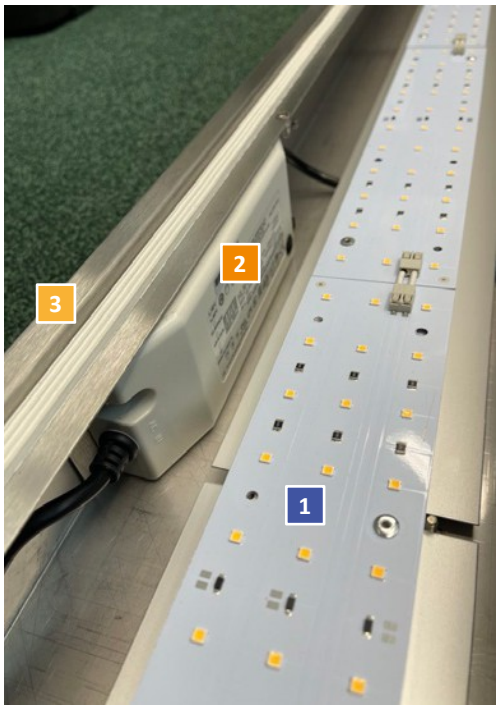
The temperatures that develop at the specified measuring points at certain intervals after the lights are switched on can be found on the following pages.

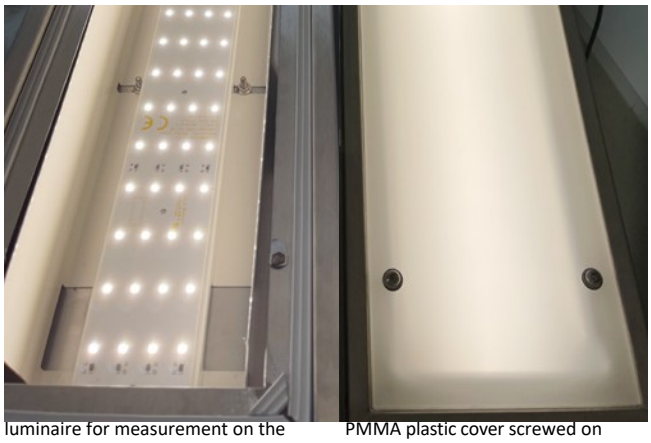
Measurement situation

Date of measurement: 14 September 2021 Room temperature: approx. 21 °Celsius Measuring device: TESTO thermal imaging camera

Measurement points

1. Circuit board with LED chips
2. Meanwell converter (ballast)
3. Housing (stainless steel) exterior



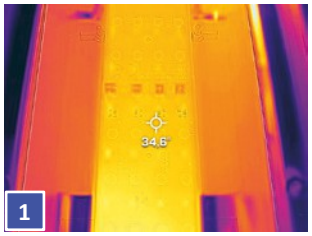


luminaire for measurement on the circuit board

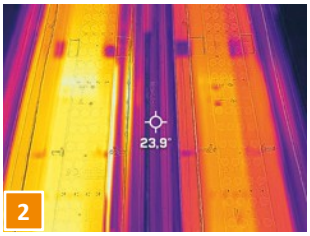
PMMA plastic cover screwed on

Examples of temperature measurement

Examples of temperature measurement using the TESTO thermal imaging camera:



The measuring point on the circuit board shows a temperature of 34.6 °C.

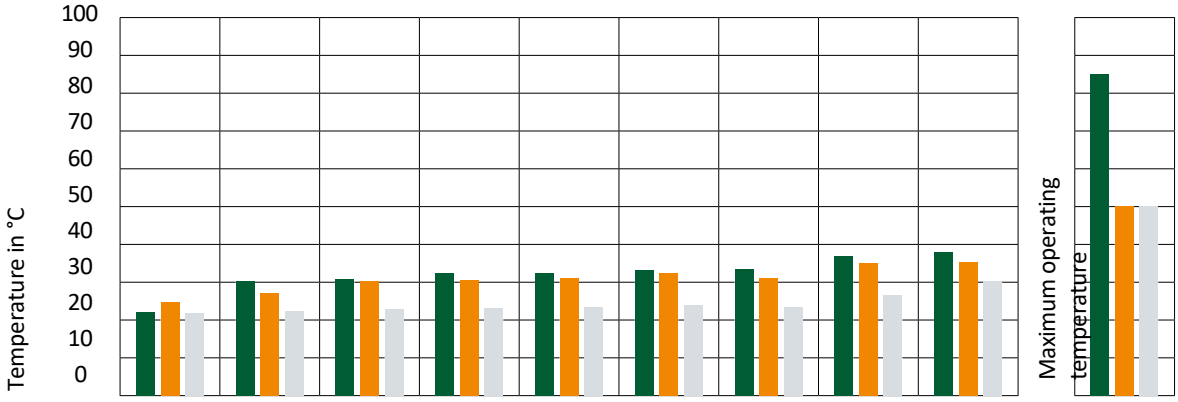


The measuring point on the converter shows a temperature of 23.9 °C

The measuring point on the housing shows a temperature of 26.7 °C

Thermal testing of REVEN 20 LED

Result of the thermal test of the REVEN® LED luminaire with 20 watts



Time min*	7:30	10	20	45	60	90	120	240	540	Max.
Circuit board	**22.0**	**30.4**	**30.8**	**32.4**	**32.4**	**33.2**	**33.4**	**37.0**	**38.0**	**95**
LED driver	**24.6**	**27.2**	**30.4**	**30.6**	**31.2**	**32.4**	**31.2**	**35.0**	**35.4**	**75**
Lamp housing	21.8	22.4	23.0	23.2	23.4	24.0	23.4	26.6	30.2	50

Temperature in °C

Operating temperature

* Start time of thermal test

Date of measurement: 13 September

2021 Room temperature: approx. 25.6 °C

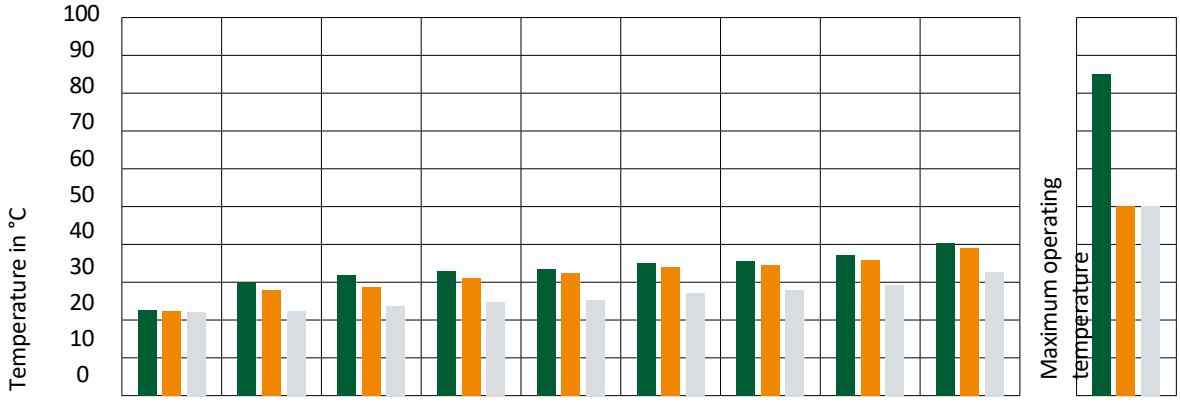
Measuring device: thermal imaging

camera

- Measurement point: circuit board with open housing
- Measurement point: Mean Well LED driver with closed housing
- Measuring point: outer housing wall of the LED luminaire with closed housing

Thermal testing of REVEN 40 LED

Result of the thermal test of the REVEN® LED luminaire with 40 watts



Time min	7:30	10	20	45	60	90	120	240	540	Max.
Circuit board	**22.5**	**30.0**	**32.0**	**33.0**	**33.4**	**35.0**	**35.6**	**37.2**	**40.4**	**95**
LED driver	**22.4**	**27.8**	**28.6**	**31.0**	**32.4**	**34.0**	**34.6**	**35.8**	**39.0**	**75**
Lamp housing	22.0	22.4	23.6	24.8	25.2	27.0	28.0	29.3	32.6	50

Temperature °C

Operating temperature

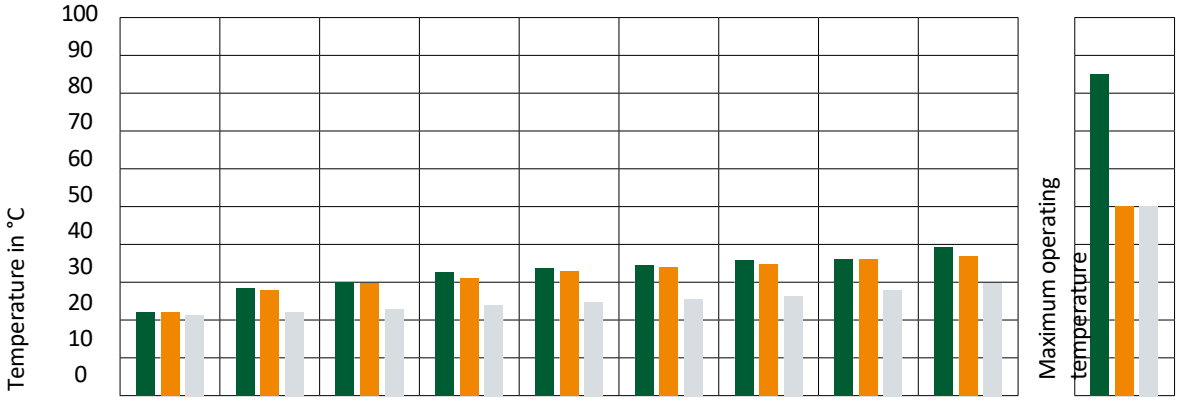
* Start time of thermal test

Date of measurement: 13 September 2021 Room temperature: approx. 22.6 °C Measuring device: thermal imaging camera

- Measurement point: circuit board with open housing
- Measurement point: Mean Well LED driver with closed housing
- Measurement point: outer housing wall of the LED light with closed housing

Thermal testing of REVEN 50 LED

Results of thermal testing of REVEN® LED luminaire with 50 watts



Time *min*	7:30	10	20	45	60	90	120	240	540	Max.
Circuit board	**22.0**	**28.4**	**30.0**	**32.6**	**33.6**	**34.6**	**35.8**	**36.0**	**39.4**	**95**
LED driver	**22.0**	**27.8**	**29.8**	**31.2**	**32.8**	**34.0**	**34.8**	**36.0**	**37.0**	**75**
Lamp housing	21.4	22.2	23.0	24.0	24.8	25.6	26.4	27.8	29.8	50

Temperature in °C

Operating temperature

* Start time of thermal test

Date of measurement: 13 September

2021 Room temperature: approx. 22.6 °C

Measuring device: thermal imaging

camera

- Measurement point: circuit board with open housing
- Measurement point: Mean Well LED driver with closed housing
- Measurement point: outer housing wall of the LED light with closed housing

Manufacturer's declaration

EU manufacturer's declaration of conformity

Product name	Product
REVEN 20 LED	LED lighting with 2 LED boards, each with 10 watts of power
REVEN 40 LED	LED lighting with 4 LED boards, each with 10 watts of power
REVEN 50 LED	LED lighting with 5 LED boards, each with 10 watts of power

Manufacturer	Rentschler REVEN GmbH

The above product complies with the essential requirements of the following directive(s) and their amendment directives:

EMC Directive (Electromagnetic Compatibility)	DIN EN 2014/30/EU
Low Voltage Directive (LVD)	DIN EN 2014/35/EU

The following relevant standards were used to assess conformity:

Harmonised EMC standard: Immunity	DIN EN 61547:2010-03
Harmonised EMC standard: Emission	DIN EN 55015:2020-07

Harmonised standard LVD: Equipment safety of luminaires	DIN EN 60598-1:2018-09

This declaration is valid worldwide as the manufacturer's declaration of conformity with the above-mentioned international and national standards.

- This declaration refers only to the lighting in the condition in which it was placed on the market.
- The essential health and safety requirements set out in Annex I of the Machinery Directive 2006/42/EC apply and are complied with.
- The specific technical documentation in accordance with Annex VII A has been compiled and will be submitted to the competent national authority in electronic form upon request.

Sersheim, ...

.....

Signature Business manager (Dipl.-Ing. Sven Rentschler, Managing Director)

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Subject to changes and errors! Version 01.1V.10M.2023Y