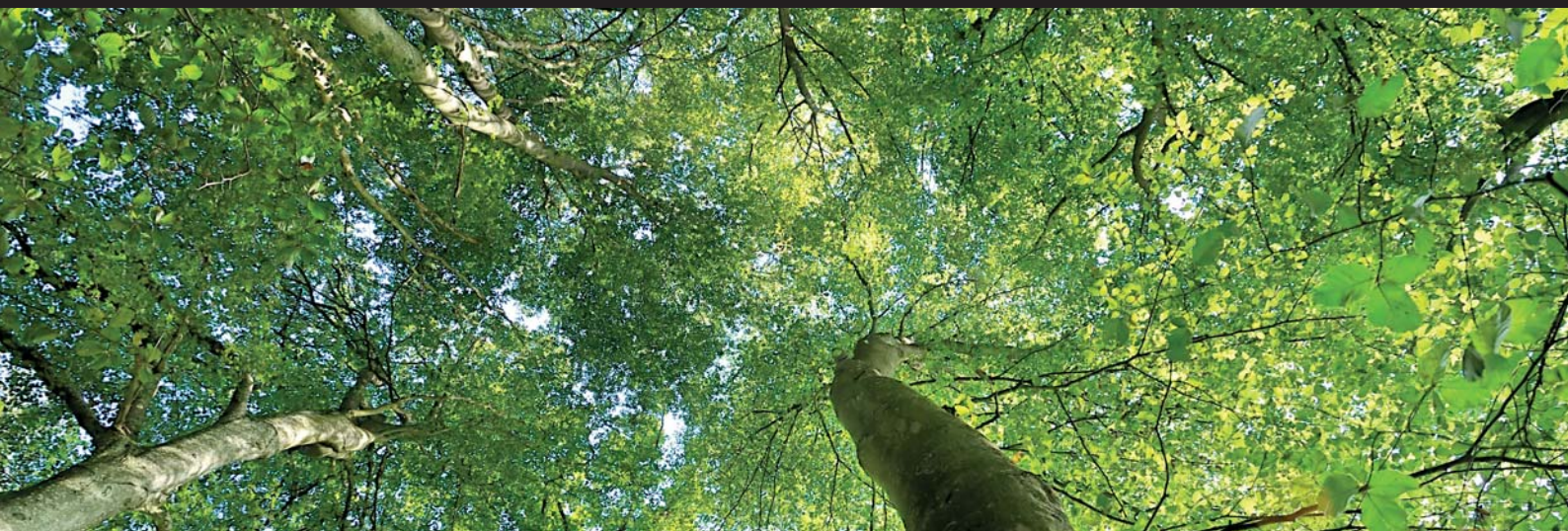
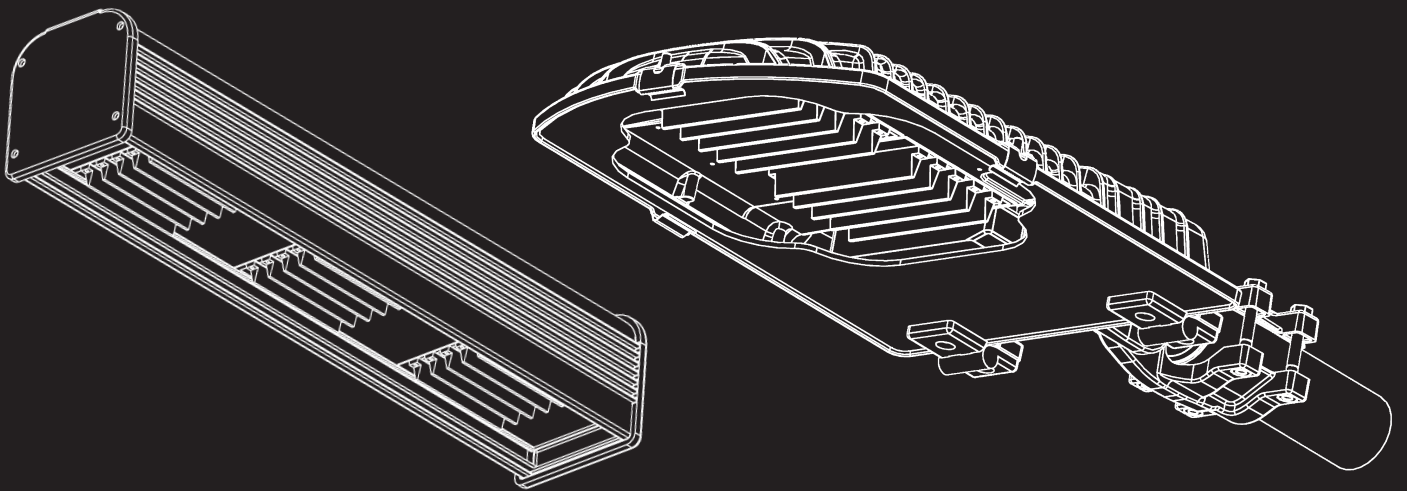




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FARA LED LAMP®

The LED lighting technology of the future
for professional use





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On the other hand, LED lamps have an enormous potential for making savings through a markedly lower level of consumption while at the same time giving more light. Add to this a working life that is several times longer and so greatly reduces the amount of maintenance required and dramatically cuts the costs for replacement parts and bulbs or tubes. The LED lamp is still right at the beginning of its development cycle here. Today the brightness values of high-power LED's are around 100 lumens per watt. Given that up to 200 lumens per watt is expected in the future, this new technology will literally put all the existing technologies into the shade. With LED's we already have a directed beam of light that can be emitted at a defined angle. This reduces the losses from reflection and absorption that had been unavoidable up to now due to the need to elaborately direct the light in the desired direction. LED's also contribute to greater safety. The very good CRI (colour rendering index) of > 80 also allows full colour vision at night. This means that we can actually see things in detail and not merely perceive them dimly.

The simple fact that LED's last far longer reduces the huge amounts of waste that are generated currently due to the need to constantly replace the older forms of illumination. Add to this that the entire lamp is made of high-quality materials that can be recycled at the end of its working life.

Lamp type	Year of termination
Fluorescent lamp T12/38 mm basic	2012
Fluorescent lamps T8/26 mm basic	2012
HPS/NAV plug-in at HPM-VG	2012
HPS/NAV standard	2012
MML/HWL lamps	2015
HPM/HQL lamps	2015

Meeting the challenge of the future

Worldwide, around 20% of the electric current that is consumed is wasted by inefficient lighting. An important step in the right direction was taken through the Eco-design Directive 2005/32/EC, also called Energy using Products (EuP), which among other things requires doing away step by step with inefficient and environmentally-unfriendly forms of lighting. Incandescent light bulbs with frosted glass and 100 watt light bulbs were the first to disappear from the shelves as a result.

But the main focus of the Eco-design directive is not just on domestic consumers but also on industrial and municipal lighting, and it brings new regulations concerning the latter. Here this involves forms of illumination that typically are used for the lighting of streets, offices and industrial facilities: fluorescent lamps, gas discharge lamps and the associated starter units and bulbs.

Economy meets ecology

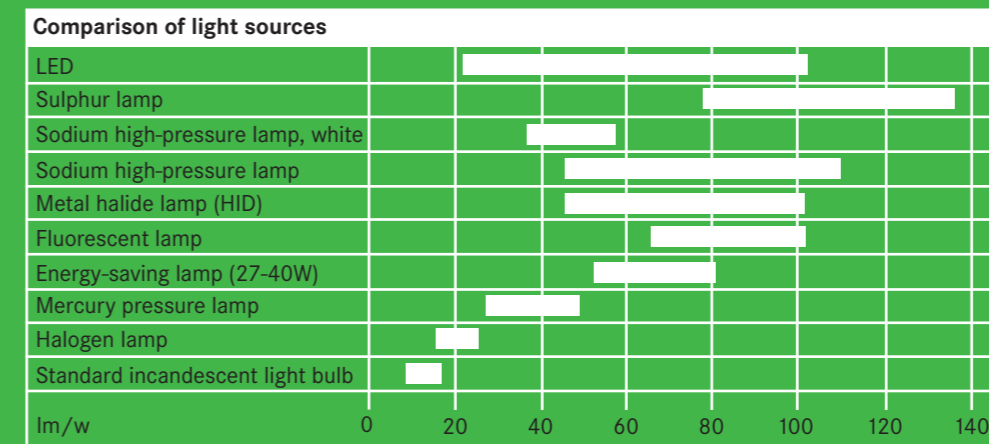
LED technology is an excellent and environmentally-friendly alternative as compared to the older forms of lighting technology. The FARA LED LAMP® from development partners Laser - Med and Vishay Intertechnology was brought up to the stage of readiness for series production against this background. This innovative lighting solution is a high-end product that is "Made in Germany" and designed for use indoors and outdoors. A number of different models are offered, including those for street and tunnel lighting and the illumination of industrial halls and premises, underground garages and parking areas, and also for pedestrian and cycle paths.

The FARA LED LAMP® is environmentally friendly from many points of view. It shines due to its markedly lower power consumption (by up to 50% when compared to the forms of lighting listed above) and thus also because it reduces emissions of CO₂ by up to 350 kg per lamp per year. Furthermore, it does not contain mercury or other heavy metals or any poisonous substances. Last but by no means least, it has an exceptionally long working life (> 50,000 hours, depending on the conditions of use).

Since LED's do not emit any light in the ultraviolet range, they do not attract insects. The result is that far less cleaning is required than is the case with a conventional light source.

To summarise the ecological balance, the high economic benefit comes in the first instance from the low operating and maintenance costs quite apart from the long working life. The investment costs can be recouped within as little as half a year and thus represent a profitable and ecological solution that shows the way of the future.

Example of a calculation of the savings LED's (panels with 24 LED's) in comparison with sodium vapour lamps on the basis of 1000 lamps	
Savings in electricity per year	210.24 MWh
Savings in electricity costs at 0,18 EUR/KWh	37,843.20 EUR
Savings in general	72 %
Savings in the amount of CO ₂ emitted	125.3 t



Modular lighting technology

FARA LED LAMP®

LED technology has been used as effect lighting or in the automotive sector for a number of years, and it is making inroads in the field of indoor and outdoor lighting. The primary reasons for using it are the sensationally low energy consumption and the associated potential for making savings. A further goal of the developers has been to increase its effectiveness even more through intelligent control technology. Conserving valuable resources makes FARA lamps even more of a sustainable product.

FARA lamps are designed to be modular so that they can be configured accordingly to suit customer requirements. The shaping of the housing stays the same and gives an uniform “look” across the range.

Fail-safe

Working on the basis that you can never be too safe, a quasi-redundant system was developed using FARA LED technology, the so-called “active sKs” (active self-correcting Control system). Here the individual components of a lamp are controlled and monitored by a microprocessor. This virtually excludes any possibility of a total failure of the lamp as a result.

Long life

The life of the LED primarily depends on the operating temperature. Good heat management was therefore the priority when developing the housing. A positive side-effect is a further reduction in the amount of current used.

Power supply

The mains power supply used in the FARA LED LAMP® meets all the preconditions for use in public utility networks. The active PFC ensures optimum reactive current compensation even if the FARA lamps are operated through a dimmer. A separate mains power supply per LED panel is also used in line with the modular system of the FARA lamps. The mains power supply is in a fully insulated plastic case and is protected against short circuiting, overcurrents, overvoltages and overtemperatures. It can be replaced separately and this contributes to the ease of maintenance of the lamps.

AC input	
Voltage range	90 V - 295 V/AC or
Operating range	124 - 417 V/DC
Frequency range	47 - 63 Hz
Power factor at full load (PFC)	PFC > 0.9 (PFC > 0.95 at full load)
DC output	
Output voltage	12 V/DC
Constant current range	8.4 V/DC - 12 V/DC
Output current	2.5 A
Safety standards (incl. EMC)	EN 61347-1, 2-13 EN 55015 EN 61000-3-2 class C EN 61000-4-2, 3, 4, 5, 6, 7, 8, 11 ENV 50204 EN 55024 EN 61547
MTBF	> 600,000 hours

Driver (SLight)

The heart and the “brain” of the FARA technology is the duplicated driver that controls two 2 optomodels. The sKs once again ensures that the system is fail-safe. All components are produced in compliance with Automotive Standards (AEC_Q 100, AEC_Q 101, AEC_Q 200). The driver also has multiple interfaces for programming. All the required information such as the dimming levels, night reduction profiles and operational programs are stored in the driver. There are interfaces for the integration of a wireless module or an ambient light sensor. The driver can also be retrofitted later if desired.

LED optomodels

A special feature of the FARA LED LAMP® is that the angle of radiation of the optomodels (Free Adjustable Radiating Angle = FARA) can be adjusted as desired. It is thus possible to set up various lighting scenarios through one and the same optomodel in connection with reflectors or lenses. The number or the type of the LED's that the optomodel is equipped can also be varied to allow different opening angles or light colours. This allows a large number of different lighting variations to be produced.

Optional features

Dimming

An energy-saving technology can be made even more efficient through dimming! As standard the system is set to 25%, 50%, 75% and 100% of the maximum output and this can be called up automatically by the ambient light sensor. Alternatively, the dimming levels can be set by phase levels or controlled by a time clock. Using the optional wireless module, so-called night reduc-

tion profiles that have been saved at each lamp can be called up independently. This means that, for example, municipal outdoor lighting or also indoor lighting can be controlled down to the level of the individual lamps to save energy.

Wireless module

The wireless module serves as a radio receiver to handle commands by means of a remote control or as a radio clock with built-in real time clock. The wireless module receives the precise time by radio via the DCF77 radio signal and makes this available to the driver for control tasks (dimming profiles/reduction at night) and synchronises all the system lamps at the same time. The active sKs plays a part here as well, by running a so-called real time clock in parallel in the background. The lighting profile of the lamps can be varied individually at any time using the radio receiver to allow remote maintenance.

Charging regulator (SL-Bat)

The FARA LED LAMP® is also available in the form of a standalone solution (off-grid) that is independent of the mains supply. A driver that also serves as a charging regulator was developed especially for this application. An LED optomodel with 24 LED's can be operated with this module. A solar panel and a battery provide a standalone solution that is independent of the grid.

This driver can also be used for other applications. In addition to its capacity as a charging regulator it also has an input for a separate on/off switch and an external potentiometer for continuously variable dimming. Lamps can also be run from a 12 V or 24 V car electrical system by using the suitable input. In order to make full use of the battery capacity without deep-discharging it, the SL-Bat driver has ELm (Energy Level monitoring) which dims the lamp automatically according to the level of charge. This allows continuous illumination during the night.



Sagitta



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The indoor lamp with the patented angle of radiation

The Sagitta system is ideally suited for the lighting of interiors. It has a high-quality aluminium housing. Insulation class IP 54 means that it is optimally adapted for indoor conditions. We can offer you an especially effective yet flexible form of indoor lighting with this model. Thanks to our patented system the angle of radiation can be varied both in the horizontal and the vertical planes: 50° / 120° to 120° / 120°. The settings are carried out by the ABCDE reflectors that are screwed directly to the housing. The basic model uses reflectors that are pushed into the housing and so provide optimal beam distribution.

Areas of application

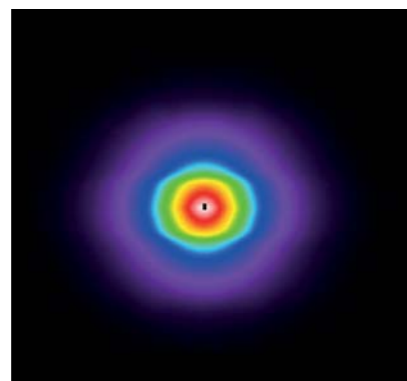
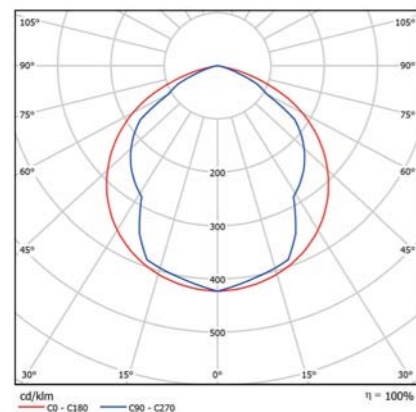
- Production and warehouse halls
- Sports halls
- Railway stations
- Airports
- Open-plan offices
- Greenhouses
- ...

Light output

CE IP54 RoHS PC TÜV SAARLAND WEEE

FARA Sagitta				
Max. energy consumption	28 w	56 w	84 w	112 w
Recommended installation height	3.5 - 5 m	5 - 14 m	6 - 18 m	7 - 25 m
Power supply	90 - 295 V/AV mains power supply or 10 - 14 V/DC without power supply			
Colour rendering index cold white	> 90			
Optomodule (sample configurations)				
VLSL30-F	1 x 24 LEDs	2 x 24 LEDs	3 x 24 LEDs	4 x 24 LEDs
Angle of radiation	100° x 120°			
Lighting intensity	45 - 6 lx	43 - 6 lx	45 - 5 lx	44 - 4 lx
Effective illuminated area at Emin = 1 lx	13 x 16 m 21 x 25 m	19 x 22 m 29 x 32 m	23 x 27 m 36 x 40 m	27 x 31 m 41 x 46 m
VLSL30-ABCDE	1 x 24 LEDs	2 x 24 LEDs	3 x 24 LEDs	4 x 24 LEDs
Angle of radiation	54° x 120°			
Lighting intensity	58 - 7 lx	56 - 7 lx	60 - 6 lx	56 - 5 lx
Effective illuminated area at Emin = 1 lx	8 x 16 m 13 x 25 m	11 x 23 m 18 x 35 m	14 x 28 m 22 x 44 m	16 x 33 m 28 x 52 m

Photometric data



VLSL30-F

Dimensions



262 (514/758/1006)



262 (514/758/1006)

All details in mm

Sizes

FARA Sagitta 250-28: 1 Optomodule 28 w



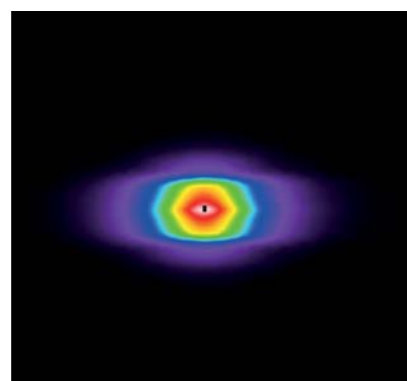
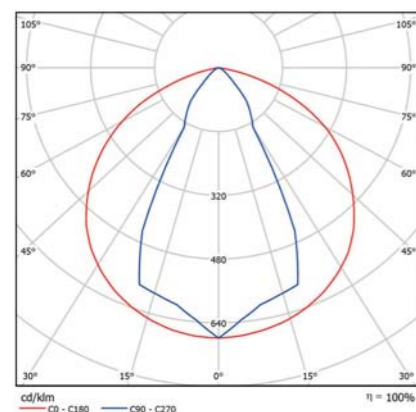
FARA Sagitta 500-56: 2 Optomodule 56 w



FARA Sagitta 750-84: 3 Optomodule 84 w



FARA Sagitta 1000-112: 4 Optomodule 112 w



VLSL30-ABCDE

All the Eulumdat files are available on request

Options

Max. energy consumption	28 W, 56 W, 84 W, 112 W
Light colour	Cold white, neutral white, warm white
Housing colour	Aluminium or powder coating according to the RAL colour scale
Attachment	Ceiling, wall, pole, cable or chain suspension
Dimming	Daylight sensor, phase dimming, potentiometer
Glass	Frosted glass, clear glass

Use our configurator which is available from www.fara-led.com



Vela



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The patented LED lamp for outdoor use

Vela – the ideal LED lamp for outdoor use that is highly cost-effective. The robust diecast aluminium housing with its finned surface guarantees excellent heat management. Being certified to insulation class IP 67, this lamp also functions even under extreme ambient conditions and meets the toughest safety standards. Using the patented freely adjustable symmetrical reflectors, the angle of radiation can be set as desired both vertically and horizontally (54° - 160°). The angle settings can be made via the reflectors (ABCDE), since they are screwed directly onto the housing. Thus the light output is always optimal.

Areas of application

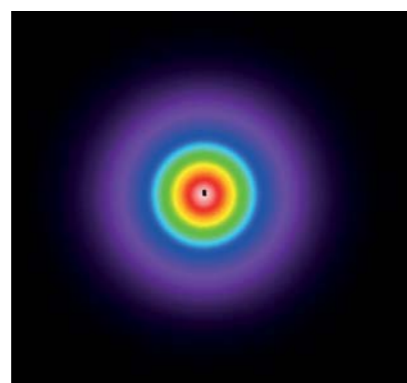
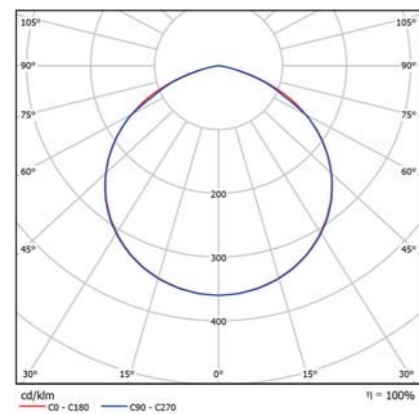
- Parking areas
- Multi-storey car parks
- Loading and unloading areas
- Sports facilities
- Airports
- Station platforms
- ...

Light output



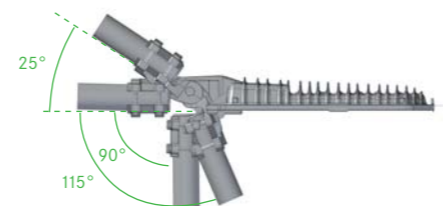
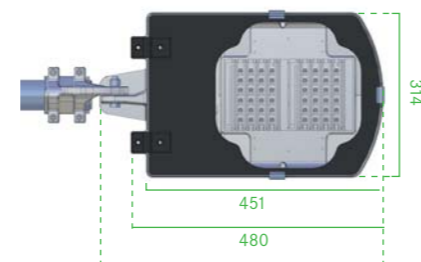
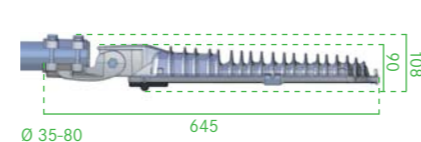
FARA Vela Outdoor			
Max. energy consumption	28 w	56 w	84 w
Recommended installation height	4 - 10 m	5 - 15 m	6 - 20 m
Power supply	90 – 295 V/AV mains power supply or 10 – 14 V/DC without power supply		
Colour rendering index cold white	> 90		
Optomodule (sample configurations)			
VL30-xxxxx	1 x 24 LEDs	2 x 24 LEDs	
Luminous flux	1601 lm	3109 lm	
Reflectors	-		
Angle of radiation	120° x 120°		
Lighting intensity	32 - 5 lx	39 - 5 lx	
Effective illuminated area at Emin = 1 lx	16 x 16 m 22 x 22 m	22 x 22 m 31 x 31 m	
VL40-ABCDE	1 x 12 LEDs	1 x 24 LEDs	1 x 36 LEDs
Luminous flux	2070 lm	3882 lm	5680 lm
Reflectors	ABCDE		
Angle of radiation	64° x 150°		
Lighting intensity	53 - 5 lx	55 - 6 lx	59 - 5 lx
Effective illuminated area at Emin = 1 lx	11 x 22 m 18 x 30 m	13 x 27 m 25 x 40 m	16 x 34 m 31 x 50 m

Photometric data



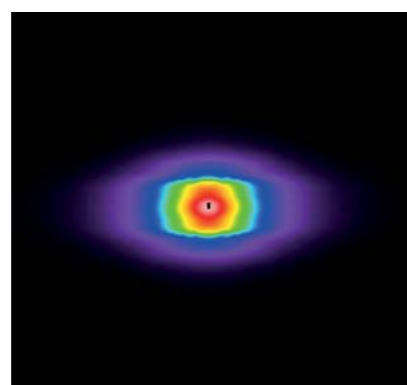
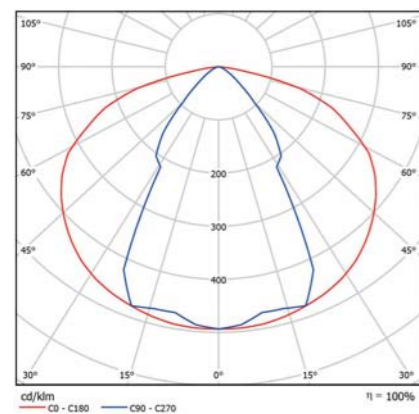
VL30-xxxxx

Dimensions



Freely adjustable attachment angle from -25° to +115°

All details in mm



VL40-ABCDE

Options

Max. energy consumption	28 w, 56 w, 84 w
Light colour	Cold white, neutral white, warm white
Housing colour	Sand-blasted aluminium or powder coating according to the RAL colour scale
Attachment	Universal holder for pole or lamp standard attachment
Dimming	Daylight sensor, phase dimming, potentiometer
Wireless module	Time-controlled dimming profiles
Charging regulator	Independent operation with solar panel and battery, charge current monitoring

Use our configurator which is available from www.fara-led.com

Vela Road



Efficient street lighting through LED technology

The Vela Road is based on the product properties of the Vela Outdoor, but it has been developed further through application-specific product properties into a road lamp with optimal cost-effectiveness. It complies with EU standard DIN EN 13201, which regulates the corresponding quality classes. Factors such as dazzle, average illumination intensity, illuminant and mirror technologies are just some of the aspects in which the FARA Vela Road complies with the above standard.

The Vela Road works with an asymmetrical lens system that produces a so-called butterfly distribution. Traffic routes can thus be illuminated optimally and evenly.

Areas of application

- Roads and streets
- Paths
- Drives and entrances
- Railway crossings
- ...



Dimensions

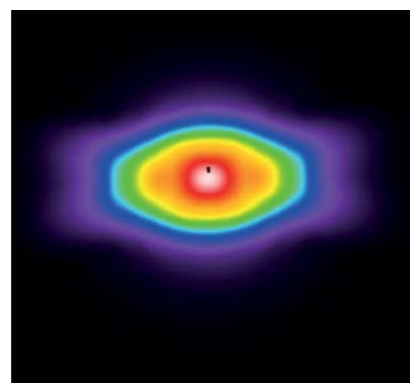
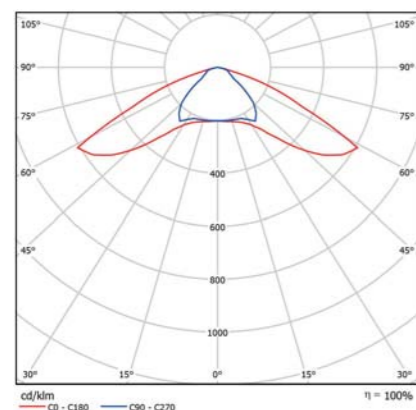
A drawing and all dimensions are given on page 8.

Light output



FARA Vela Road			
Max. energy consumption	28 w	56 w	84 w
Recommended installation height	4 - 10 m	5 - 15 m	6 - 20 m
Power supply	90 – 264 V/AV mains power supply or 10 – 14 V/DC without power supply		
Colour rendering index cold white	> 90		
Optomodule (sample configurations)			
VLSL50-xxxxx	1 x 12 LEDs	1 x 24 LEDs	1 x 36 LEDs
Luminous flux	2477 lm	4664 lm	6792 lm
Reflectors	-		
Angle of radiation	90° x 130°		
Lighting intensity	26 - 4 lx	32 - 3 lx	33 - 3 lx
Effective illuminated area at Emin = 1 lx	13 x 23 m 22 x 38 m	18 x 30 m 31 x 55 m	21 x 35 m 40 x 70 m

Photometric data



VLSL50-xxxxx

Options

Max. energy consumption	28 w, 56 w, 84 w
Light colour	Cold white, neutral white, warm white
Housing colour	Sand-blasted aluminium or powder coating according to the RAL colour scale
Attachment	Universal holder for pole or lamp standard attachment
Dimming	Daylight sensor, phase dimming, potentiometer
Wireless module	Time-controlled dimming profiles
Charging regulator	Independent operation with solar panel and battery, charge current monitoring



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The companies

Laser - Med GmbH and Vishay Intertechnology Inc. are the two companies behind the FARA LED LAMP®. The development of the FARA technology was initiated by Laser - Med GmbH in the summer of 2008 and developed to the level of being ready for series production, with all applicable lighting standards being taken into account. The FARA LED LAMP® has been manufactured at Laser - Med as a "Made in Germany" product ever since August 2009. Ever since it was founded in 1997, Laser - Med has stood for high quality in the field of optoelectronics in its capacity as a specialist for laser products in medicine and industry. Vishay Intertechnology, one of the biggest manufacturers worldwide of discrete semiconductors and passive electronic components, played a vital part in the creation of the new LED lighting.

Service

We plan your special solution together with our sales partners. We develop a suitable lighting concept for the desired application, visualise the implementation, and calculate what is the most efficient solution for you for the indoor and outdoor area on the basis of various concepts. On request we can also offer you suitable financing through our financing partners. If you should in addition also require support in the management of your project, then we would be very glad to help you with that as well.

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