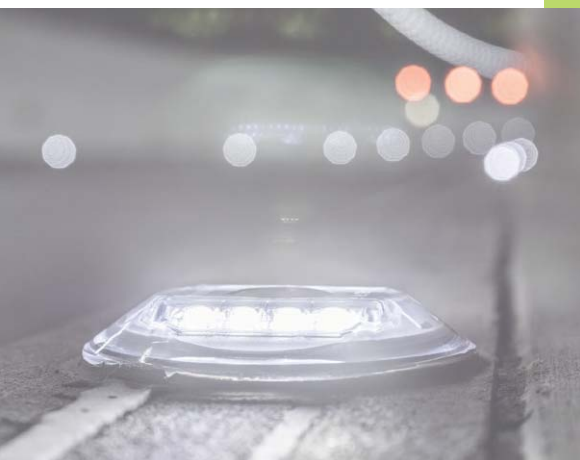


SYSTEMATIC QUALITY

# LED guidance systems

Catalogue LED guidance systems







**GIFAS**  
ELECTRIC

**09A**





## MarkLED 4

Pages 4 - 7

Product /System	Technical data	Applications	Product range
			
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## MarkLED EXIT

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Product /System	Technical data	Applications	Product range
			
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## TrafficLED

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Product /System	Technical data	Applications	Product range
			
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## CircLED

Pages 16 - 19

Product /System	Technical data	Applications	Product range
			
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## SecuLED

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Product /System	Technical data	Applications	Product range
			
Page 20	Page 21	Page 22	Page 23

## Accessories

Pages 24 - 27

Control unit and remote control	Power pack	System components – mounting
		
Page 24	Page 25	Pages 26 - 27

## LED guidance systems – for safe traffic routing



MarkLED 4



MarkLED EXIT



TrafficLED



CircLED



SecuLED

This brochure provides an overview of our product line of optical guidance devices, applicable in tunnels, roundabouts or on the road in general.

We have detailed information, documentation, certificates for our system MarkLED which we would be appreciate to send if you are interested.

### Why optical guidance systems?

An optical guidance device improves recognition of lanes or obstacles, particularly during times of poor visibility (at night, fog, etc.) as well as vulnerable traffic areas such as tunnels, curves, roundabouts or traffic islands. The signals provide a very high degree of safety for traffic.

The system complies with current regulations (BAST Germany, FEDRO Switzerland e.g.), and are continuous EMC-approved, which means, that the system functions with cables/wires and is non-inductive, so electromagnetic fields are excluded.

The systems are installed directly in the road surface. However, it is important that the installation area is not constantly driven over.

Our recess-mounted lamps are compatible with all GIFAS systems. They complement each other ideally and require the same system components, such as a control unit, feeder cable, etc.

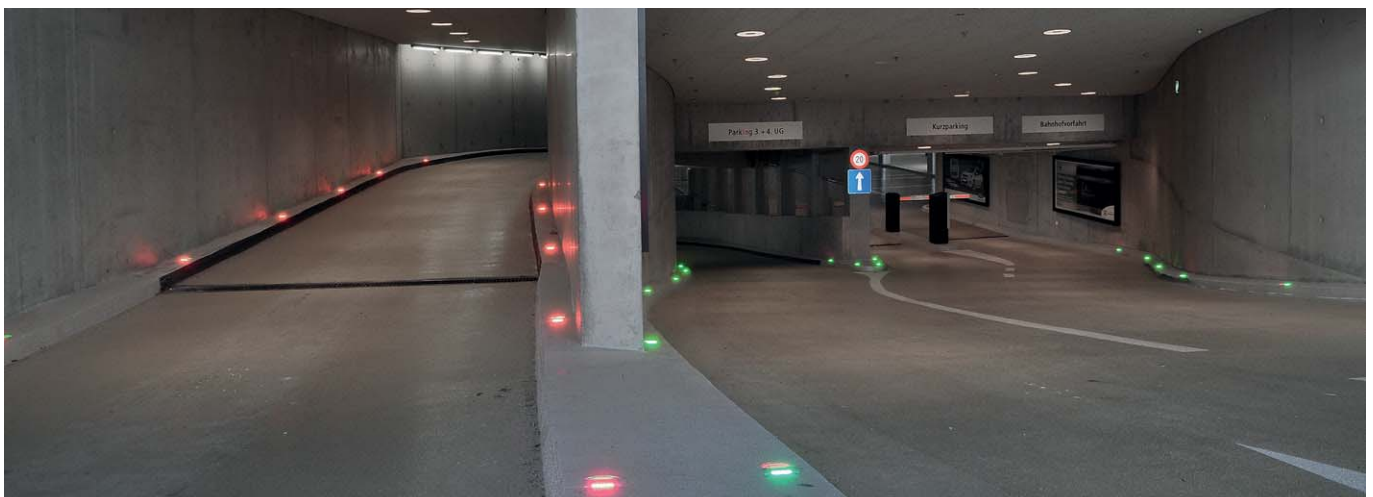
All GIFAS systems can be dimmed across a continuous scale using the control unit or remote control.

### Your benefits at GIFAS

- EMC-approved, no inductive interference
- quick and easy installation
- latest LED technology, very low power consumption
- vandal-proof, reinforced synthetic material/V4A Investment casting
- dimmable by control unit
- interoperable with all LED guidance systems
- modular construction, low-maintenance
- often set in systems in different applications
- thereby high product- and application know-how

### Our services

- many years of know-how, experienced Project Manager
- individual advice, also on site
- large standard range, individual solutions possible
- expert advice on installation and bringing into service
- creating CAD documents, voltage drop calculations and tunnel disposals
- own service team with professional equipment and many years of know-how



LED guidance systems in the FHS St. Gallen parking garage



The MarkLED is a cable-guiding system with current carried through direct connections. This allows us to reach a very high efficiency factor ( $>80\%$ ) and to remain within the limits for electromagnetic compatibility (EMC). With the state-of-the-art LED technology, power consumption is so low that the desired line lengths can be usually realised without intermediate supply. The power consumption is extremely low because of the high energy efficiency. With those technical features we comply with regulations and expectation from public institutions and departments of international road engineering.

## The upper part – the MarkLED light module

The new top part is executed in an attractive and elegant form with a housing made of special transparent plastic. The outer surface is nano coated and antistatic for high dirt repellency. The electronics are installed from below and sealed with a neutral, white sealing compound. The brightness of the individual modes, such as dimming, blinking and flashing, are easily adjustable via the control units associated with the system and can also be influenced from the tunnel control centre or by overriding pulses.

## The lower part – the current collector

The «core» of this system is the current collector. It transfers the power from the system cable to the light module and offers it a fixed base for mounting. The cable need not be cut and therefore, continues to be fail-safe. The light module comes preassembled on the current collector (fast and safe installation on site).

1. Placement of the system cable in prepared groove
2. Power transfer from the system cable to the light module
3. Mounting base for light module

## The system cable

For the LED guidance systems you need a system cable as a feed line of every module.

## Control units

The new 4-channel control unit is used to control the GIFAS guidance systems. It can be integrated into existing control cabinets or also as a «stand alone» module.

## Accessories

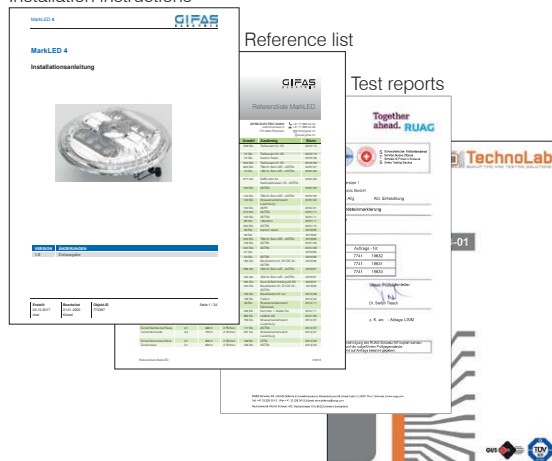
The diverse range of accessories allows different areas of application and fulfills complex customer requirements.

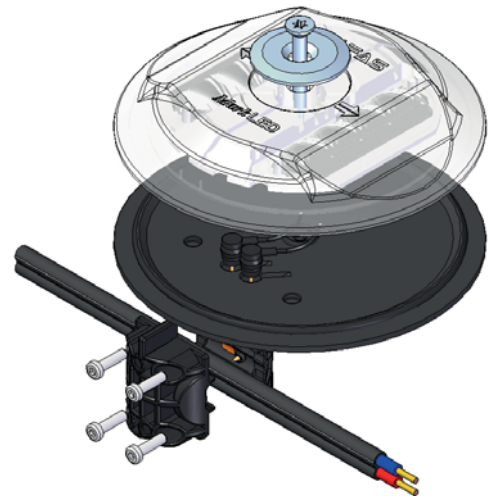
## Functionality

The guidance systems have a wide voltage range between 16-48VDC. This allows to realise very long line distances. In addition, all systems are tested to meet IP68 protection. Thanks to the modular design, the individual components can be replaced quickly in case of service.

## Product documentation

### Installation instructions





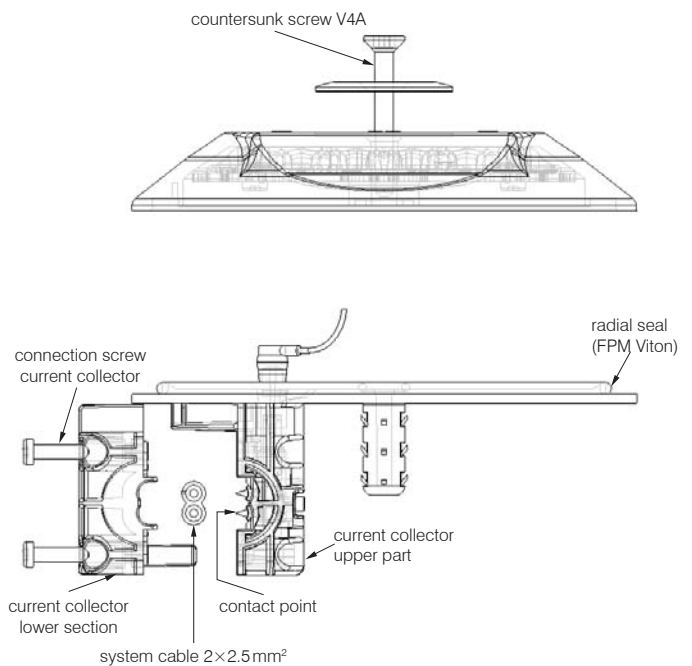
## Technical data

Single or double-sided with 4 LEDs each

Light colour:	white ~5'600K
Light intensity:	50 cd
Operating life LED:	L90/B10 100'000h
Protection category:	IP68
Protection class:	III
Operating voltage:	24VDC (range 16-48VDC)
Power consumption:	30mA (double-sided LED white) 80mA (double-sided LED colored)
Diameter:	110 mm
Height	
– without current collector:	18 mm
– with current collector:	20 mm
Upper part:	polycarbonate, colourless, nano coated, dirt-repellent
Lower section:	polyamide 12 black, glass fiber reinforced
System cable:	system cable bipolar 2×2.5 mm <sup>2</sup>
Temperature resistance:	–40° C to +55° C
Axle load:	to 5t (slow traffic with air-filled tyres)

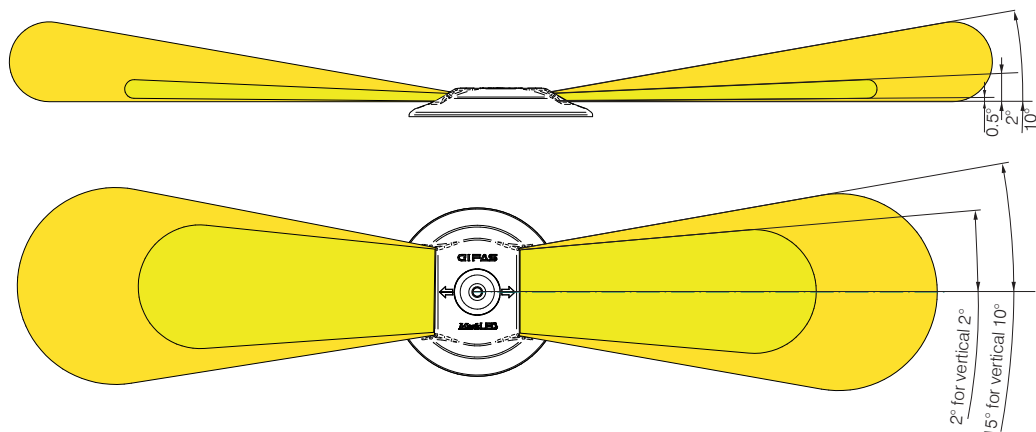
 Certificates, reference lists on request.

## One-components MarkLED 4



## Scheme light emission

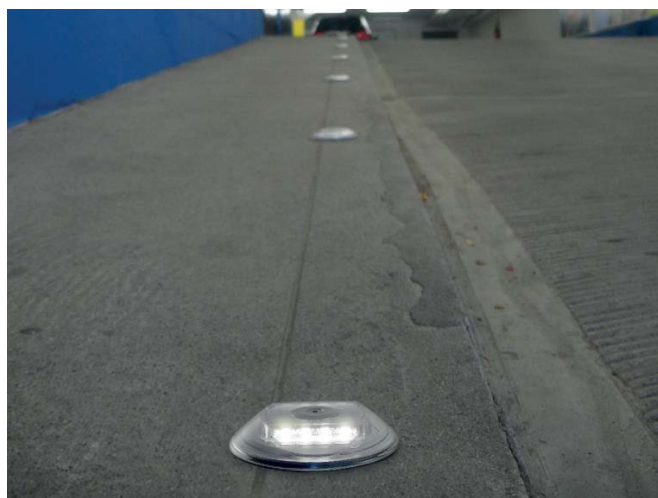
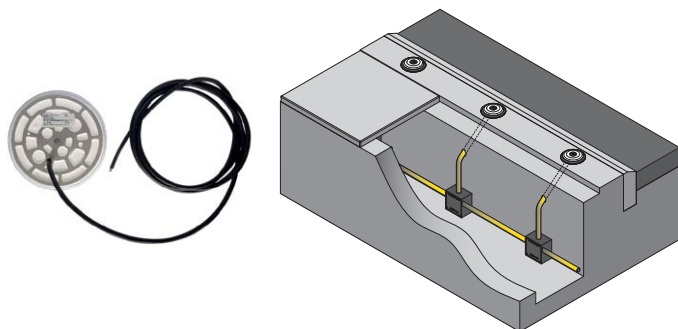
MarkLED the system meets the regulations of the Federal Road Authority (e.g. BAST-Germany, FEDRO Switzerland).





## Example 1 – wired

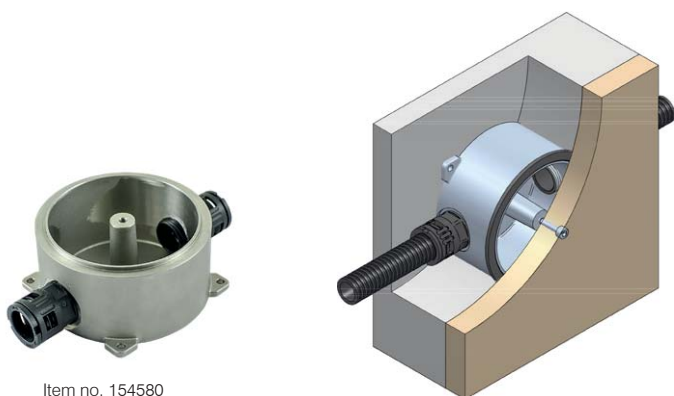
By default, the MarkLEDs are connected with current collector in a milled groove in the shoulder. If this is not possible, a conventional strand cabling with junction boxes/sleeves can be realised. Here, a strand cabling with FE180 cable is installed and connected to a box/sleeve.



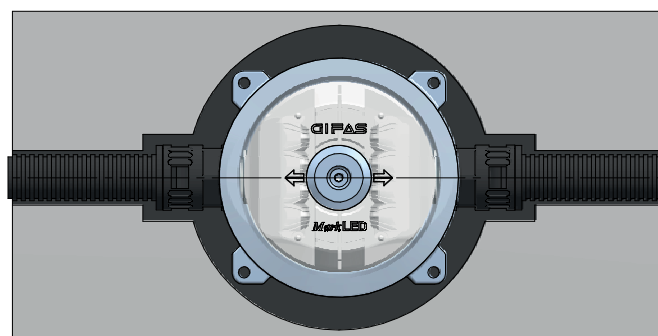
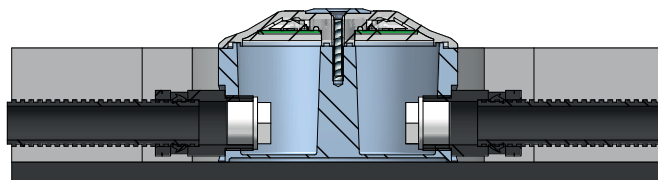
Garage entrance Rätia Davos

## Example 2 – recessed-mounted

With the recessed-mounted box for MarkLED we can offer a robust and easy solution for a recessed installation of MarkLED. On both sides, hose connection (M25) are prepared for the connection of a protective hose.

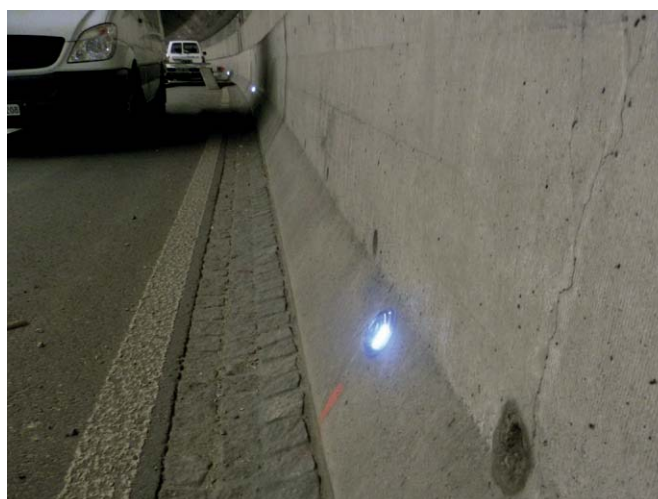
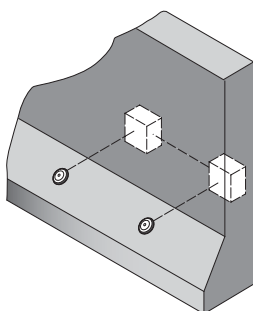


Item no. 154580



## Example 3 – New Jersey profile

If the MarkLED has to be mounted for example on a New Jersey profile then there should be made a cross drill through the profile. On the backside a junction box can be set or inserted directly in a existing cable tray.



Tunnel Stephanshorn St. Gall

## Example 4 – surface-mounted

A further possibility to mount the MarkLED is with surface-mounted solution. Here, the MarkLED is screwed onto a surface-mounted box, wherein the MarkLED has no current collector, but a direct outlet, which is connected to the feed line in the housing.



Item no. 152744



Item no. 144534

## System cable light

The system cable MarkLED is a halogen-free EPR/EPR cable with tinned copper strands, high temperature resistance, bonding between the insulations of strands and the cable coating to increase water tightness.

### Technical data

Material properties:	halogen-free, no toxic and corrosive gases
Fire behavior:	low smoke emission, flame-retardant, no fire spread, low fire load
Strand colors MarkLED:	red, dark blue
Nominal section:	2.5 mm <sup>2</sup>
Exterior dimensions:	9.6 mm × 5.25 mm
Weight (kg/km):	approx. 80 kg/km
Cu-Number (kg/m):	48 kg/km (48 g/m)
Fire load (kwh/m):	approx. 1'280 kJ/m
Temporary temperature resistance:	< 10 s: 200° C

Item no.	Description
115788	System cable light black – copper tinned flat cable EPR/EPR, 2×2.5 mm <sup>2</sup>
148912	System cable light red – copper tinned, flat cable EPR/EPR, 2×2.5 mm <sup>2</sup>
148913	System cable light blue – copper tinned, flat cable EPR/EPR, 2×2.5 mm <sup>2</sup>

## Drilling jig MarkLED 4

Drilling jig for mounting hole Ø9 mm and installation hole for current collector pin Ø40 mm.



Item no.	Description
860599	Drilling jig MarkLED 4



Tunnel Limfjord Denmark

## Product range MarkLED

Item no.	Description
860247	MarkLED 4 light module with current collector 30 mA/double-sided 4×white, 5'600 K
860560	MarkLED 4 light module with current collector 80 mA/double-sided 4×green, 525 nm
860561	MarkLED 4 light module with current collector 60 mA/4×white, 5'600 K/4×red, 625 nm
860562	MarkLED 4 light module with current collector 80 mA/double-sided 4×yellow, 595 nm
860563	MarkLED 4 light module with current collector 80 mA/double-sided 4×blue, 475 nm
860567	MarkLED 4 light module with strands 2×0.5 mm <sup>2</sup> , 20 cm 30 mA/double-sided 4×white, 5'600 K
860598	MarkLED 4 light module with cable 2×0.5 mm <sup>2</sup> , 2 m, with V4A mounting plate, 30 mA/double-sided 4×white, 5'600 K
860246	MarkLED 4 light module with 2 NTQ plugs 30 mA/double-sided 4×white, 5'600 K
860245	MarkLED 4 current collector
152744	MarkLED casing V4A, 110×110×29 mm 2 KV M16×1.5 for cable Ø5-10 mm
144534	MarkLED casing V4A, 115×115×46 mm 3 KV M25×1.5 for cable Ø9-16 mm
154580	MarkLED casing V4A, 110×110×55 mm 2×M25 hose connection

Other versions on request



The MarkLED EXIT combines two tunnel safety lighting systems. It is a combination of guidance and fire emergency light, and the road studs (optical guidance system) are typically installed at distances of 12.5m and 25m respectively. The MarkLED EXIT is therefore equipped with two separate lighting areas with two different characteristics, usually installed at a distance of 25m, using the same connection system, which in combination makes the system very economical.

In normal operation, only the part of the marker light (optical guidance system) is in operation. During an incident, the EXIT part is switched on so that the escape route is sufficiently lit. The MarkLED EXIT also has a wide voltage range of 18-48VDC. This allows lengths over 500m.

## The light module, MarkLED EXIT

The two lighting systems of the MarkLED EXIT are housed in the same size as the normal MarkLED 4. With the MarkLED 4, the MarkLED EXIT also shares the technology for the marker light (optical guidance system). The exact data of the marker light can be found on pages 4-7.

The EXIT part has 4 high-power LEDs, emitting on both sides. They come with a special optical coating for safe lighting of escape routes. Optionally, the MarkLED EXIT can be installed in the shoulder or on the wall.

## The current collector

It transfers the power from the system cable to the light module and offers it a fixed base for mounting.

The cable need not be cut and therefore, continues to be fail-safe. The light module comes preassembled on the current collector (fast and safe installation on site).

1. Placement of the system cable in prepared groove
2. Power transfer from the system cable to the light module
3. Mounting base for light module
4. Integrated replaceable fuse inserts (micro-fuse 20×5mm) for safety separation in case of fire.

The system MarkLED EXIT with functional maintenance E30/E60, tested according DIN EN 1363-1:2012-10 and based on DIN 4102-12.

## The system cable

The light system is connected by a double-guided system cable with a cross section of 2×2.5mm<sup>2</sup>. This cable is embedded in a groove in the shoulder in the case of floor mounting.

## Control units

The new 4-channel control unit is used to control the GIFAS guidance systems. It can be integrated into existing control cabinets or also as a «stand alone» module.

The EXIT part can be powered directly via its own power supply, as it is operated with full brightness in the case of an incident and a control makes little sense.

## Accessories

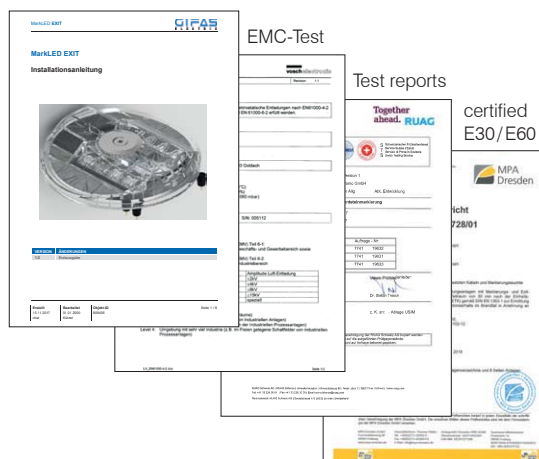
The diverse range of accessories allows different areas of application and fulfills complex customer requirements.

## Functionality

The MarkLED EXIT is a system that can be used as a guidance in the tunnel as well as the actual fire emergency lighting. Corresponding sample installations have been created and tested in cooperation with FEDRO. The application must be checked carefully for each project, depending on the structural conditions.

## Product documentation

Installation instructions







## Technical data

Double-sided with four white LEDs (5'600K) as optical guidance system in direction of traffic and in opposite direction. Fire emergency lighting turned against the wall with four white LEDs (5'900K).

### Light colour:

- optical guidance system 5'600K
- fire emergency lighting 5'900K

### Light intensity:

- optical guidance system 65 cd
- fire emergency lighting 1390 cd

### Operating life LED:

- optical guidance system L90/B10 100'000 h
- fire emergency lighting min. 10'000 h

### Protection category:

IP68

### Protection class:

III

### Operating voltage:

48VDC (18-48VDC, protected against polarity reversal)

### Power consumption:

- optical guidance system 30 mA (double-sided LED white)  
80 mA (double-sided LED colored)
- fire emergency lighting 180 mA @ 48VDC

### Diameter:

110 mm

### Upper part:

polycarbonate, colourless, nano coated

### Lower section:

polyamide 12 black, glass fiber reinforced

### System cable:

2×system cable bipolar  
2×2.5 mm<sup>2</sup>

### Height above carriageway level:

21.5 mm

### Temperature resistance:

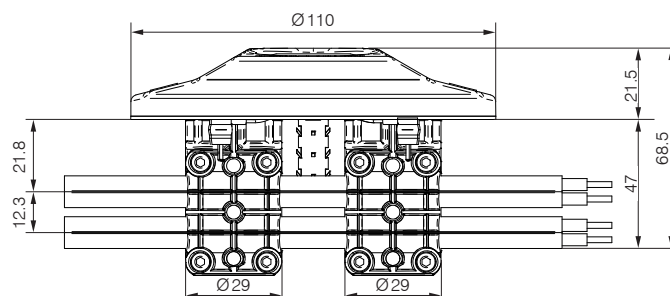
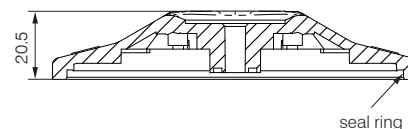
–40° C to +55° C

### Axle load:

< 5 t (slow traffic with air-filled tyres)

 Certificates, reference lists on request.

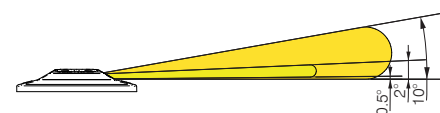
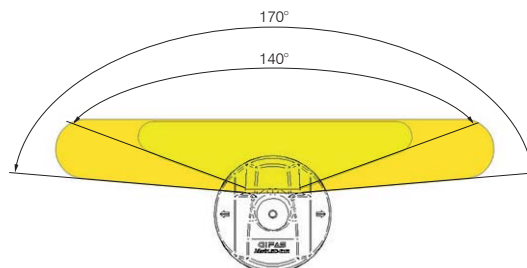
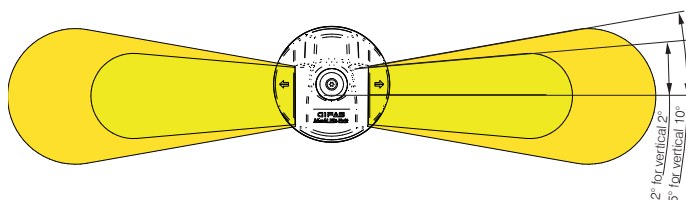
## One-components MarkLED EXIT



## Scheme light emission

### Optical guidance system

(Light emission in the direction of traffic)



## MarkLED EXIT used for fire emergency lighting

In the FEDRO 13015 guideline, the function of the fire emergency lights is defined as follows: In the case of an incident, it must be ensured that the escape route in the traffic area is sufficiently visually perceived. A separate fire emergency lighting is not required if this function can be taken over by the optical guidance system.

With this pioneering new development of the MarkLED EXIT, which combines the optical guidance system and the fire emergency lighting in one, a new dimension of economy is achieved.

In this execution, a second light source with focused radiation is integrated into the proven guidance system. This is only activated in case of an incident and immediately reaches its full brightness.

The MarkLED EXIT modules are equipped with cold conductor monitoring (function monitoring of the EXIT area possible with the fire emergency lighting off).

## Light distribution when mounted on the floor

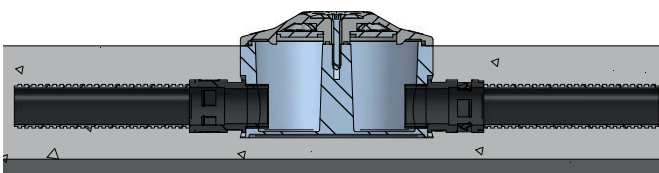
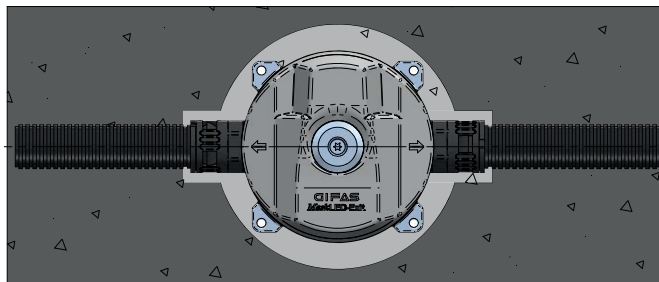


## Light distribution when mounted on the tunnel wall



## Special solution for customers

MarkLED EXIT installed in the surface/recessed-mounted housing can be used for other applications as well.



Example: Floor installation with guidance system and light radiation to the ceiling.



Example: MarkLED EXIT on surface/recessed-mounted housing in emergency event mode

Emergency= fire emergency lighting switched on



Example: MarkLED EXIT on surface/recessed-mounted housing in standard mode

Standard= optical guidance system

## Complete product module



## System cable

The system cable MarkLED is a halogen-free EPR/EPR cable with tinned copper strands, high temperature resistance, bonding between the insulations of strands and the cable coating to increase water tightness.

### Technical data

Material properties:	halogen-free, no toxic and corrosive gases
Fire behavior:	low smoke emission, flame-retardant, no fire spread, low fire load
Strand colors MarkLED:	red, dark blue
Nominal section:	2.5 mm <sup>2</sup>
Exterior dimensions:	9.6 mm × 5.25 mm
Weight (kg/km):	approx. 80 kg/km
Cu-Number (kg/m):	48 kg/km (48 g/m)
Fire load (kwh/m):	approx. 1'280 kJ/m
Temporary temperature resistance:	<10 s: 200° C

Item no.	Description
115788	System cable light black – copper tinned, flat cable EPR/EPR, 2×2.5 mm <sup>2</sup>
148912	System cable light red – copper tinned, flat cable EPR/EPR, 2×2.5 mm <sup>2</sup>
148913	System cable light blue – copper tinned, flat cable EPR/EPR, 2×2.5 mm <sup>2</sup>

## Drilling jig MarkLED EXIT

Drilling jig for mounting hole Ø9 mm and installation hole for current collector pin Ø40 mm.



Item no.	Description
860600	Drilling jig MarkLED EXIT

## Product range MarkLED EXIT

Item no.	Description
860327	MarkLED EXIT light module with current collector Guidance: 30 mA/double-sided 4×white, 5'600 K Emergency: 180 mA@48 VDC/4×white, 5'900 K
860467	MarkLED EXIT light module with current collector Guidance: 80 mA/double-sided 4×yellow, 595 nm Emergency: 180 mA@48 VDC/4×white, 5'900 K
860597	MarkLED EXIT light module with current collector Guidance: 60 mA/4×white, 5'600 K/4×red, 625 nm Emergency: 180 mA@48 VDC/4×white, 5'900 K
860564	MarkLED EXIT light module with strands 4×0.5 mm <sup>2</sup> , 20 cm Guidance: 30 mA/double-sided 4×white, 5'600 K Emergency: 180 mA@48 VDC/4×white, 5'900 K
860604	MarkLED EXIT light module with cable 4×0.25 mm <sup>2</sup> , 2 m, with V4A mounting plate, Guidance: 30 mA/double-sided 4×white, 5'600 K Emergency: 180 mA@48 VDC/4×white, 5'900 K
860326	MarkLED EXIT light module with 4 NTQ plugs Guidance: 30 mA/double-sided 4×white, 5'600 K Emergency: 180 mA@48 VDC/4×white, 5'900 K
860325	MarkLED EXIT current collector

Other versions on request



## The permanent drive-over marker and warning lights with the latest LED technology!

By popular demand and as widely requested, we have developed a completely new light that covers a variety of needs. In particular, the main target during development was the ability to withstand constant traffic on streets, on squares, or in tunnels. It is also often used in the driveways of tunnels for improved visibility of the course of lane and pedestrians for improved active safety. Last, but not least, they can also be used to light roundabouts (also for heavy traffic).

Standard SN 640853 «Underfloor Marker Lights» served as the basis for development with the following specifications and requirements:

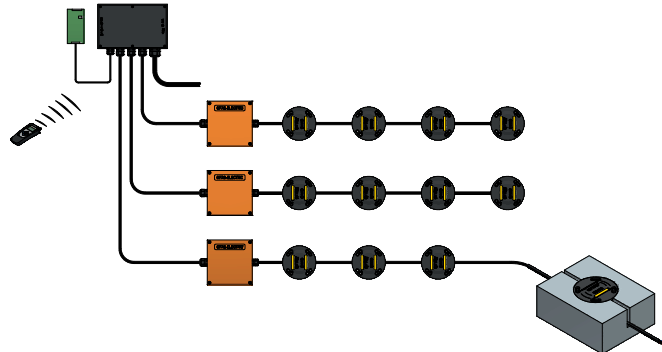
- drive-over marker lights that can withstand constant traffic and that cover the entire summer/winter temperature range (–30 to +75°C) and that can withstand mechanical stresses (40t truck)
- for safety reasons (slip hazard) matt, circular light
- protrude over road surface level max. 4.0mm
- resistant to sand, snow spikes and chains, street cleaning
- have no protruding corners or edges that could be touched by a snowplough
- surface and light emission areas are designed in such a way that as little dirt as possible is deposited
- waterproof, frostproof, and resistant to UV sunlight/chemicals/oil and road salt
- control by push button, radar sensor, loop, vibration plate, or timer switch (e.g. school buildings)
- very good visibility in the dark, wet, and snow
- other applications: such as lane marking

The TrafficLED system complies with current regulations (e.g. BAST in Germany, FEDRO in Switzerland) and is one of the few EMC-tested systems, which means that the system works via wires, not induction.

## TrafficLED module

The TrafficLED is connected with the system cable. It lights on both sides. Due to its modular structure with an upper and lower part, it is very easy to install.

The different modes of the TrafficLED, such as dimmable, blinking, flashing, etc., can be set via the controller.



## Control

The new 4-channel control unit is used to control the GIFAS control units. It can be integrated into existing control cabinets or also as a „stand alone“ module.

## Remote control

The remote control can be used for programming, operation and fault diagnosis. A single remote control can be used for multiple control units.

## Standard cable

The system cable is made specifically for the GIFAS recessed lighting systems to meet its demands; the cable is halogen-free, mechanically reinforced, and may come briefly into contact with hot substances such as bitumen.

## Junction box

The junction box is the control interface and the actual «front installation». Usually, the junction boxes are placed at the beginning or at the end of each line of TrafficLEDs, easy to assemble with prefabricated mounting tabs. We recommend our own standard junction boxes which meet all system requirements.

## Product documentation

### Installation instructions



### Reference list

High pressure steam-jet



### Light distribution





# TrafficLED - the system and the technology



## Technical data

Double-sided with 6 LEDs on each side

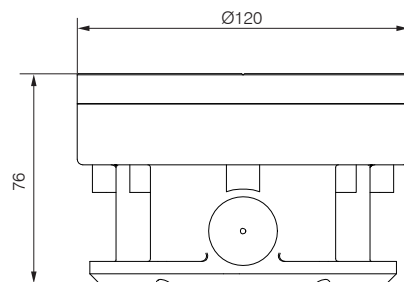
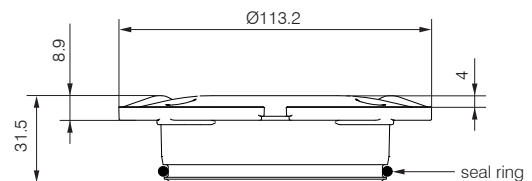
Light colours:	white (5'600 K), orange (600 nm), blue (470 nm)
Luminous intensity:	30 cd
Operating life LED:	50'000 h
Protection category:	IP68/IPX9K
Protection class:	III
Operating voltage:	24 VDC (range 18 - 44 VDC)
Power consumption:	140 mA @ 18 - 28 VDC / 85 mA @ 28 - 44 VDC
Diameter:	120 mm
Height:	80 mm
Upper part:	chrome steel V4A
Lower section:	IXEF glass fiber reinforced polyarylamide, black
Height over road surface level:	4 mm
Temperature resistance:	-30° C to +75° C
Drive-over resistance:	D400 according to DIN EN124

Certificates, reference lists on request.

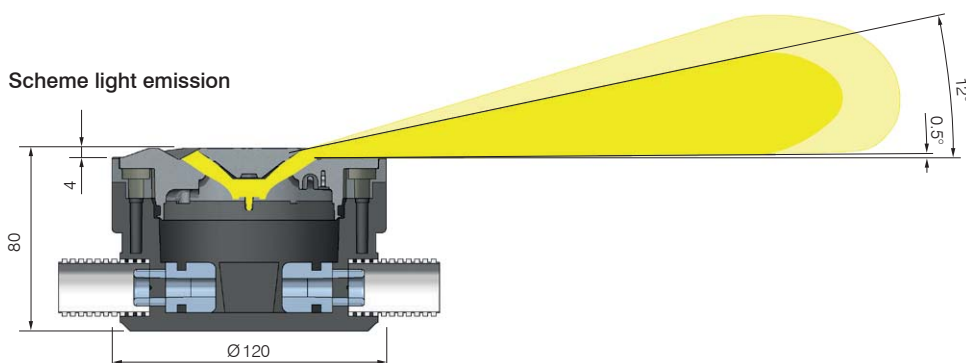
## The TrafficLED

- floor pit made out of special IXEF plastic
- stainless steel V4A upper section
- electronics completely encapsulated
- both sides fitted with LEDs
- Brightness of the lighting modules can be easily adjusted via controller unit and changed from the tunnel control centre via automatic light control or direct control system.

## One-components TrafficLED



## Scheme light emission





TrafficLED



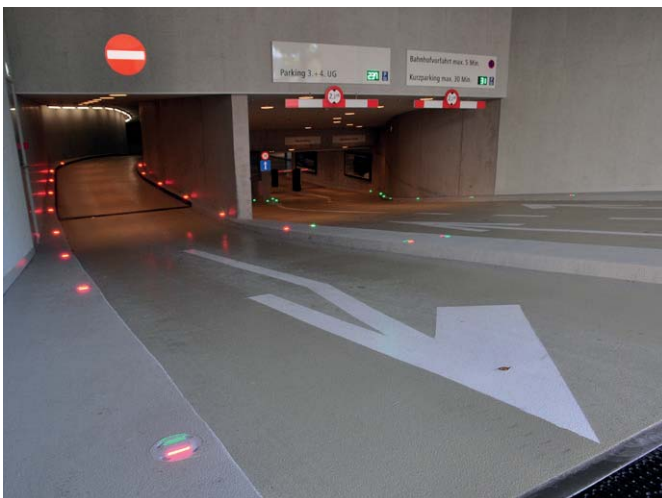
TrafficLED



Street lighting Verbier



Roundabout Döttingen



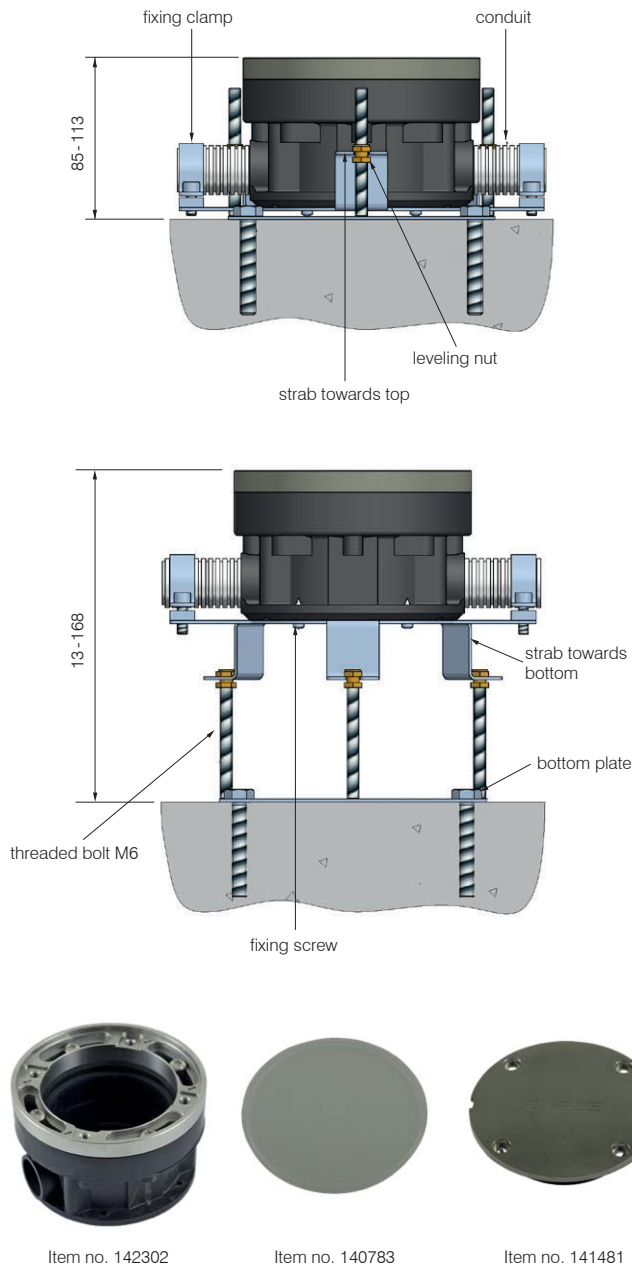
Cityparking St. Gall



Parking space Aston Martin



## Leveling support item no. 037712



## Assembling jig for TrafficLED

GIFAS provides a suitable assembling jig for installing the TrafficLED on loan. This makes it possible to adjust to the ground level exactly and to optimise the relocation of the component.



Item no.	Description
143015	Assembling jig TrafficLED (on loan by GIFAS)



## Product range TrafficLED

Item no.	Description
139997	TrafficLED light module V4A, 18-28VDC, 140 mA / 28-44VDC, 85mA, double-sided 6×LED blue, 470 nm
136194	TrafficLED light module V4A, 18-28VDC, 140 mA / 28-44VDC, 85mA, double-sided 6×LED orange, 600-609 nm
138244	TrafficLED light module V4A, 18-28VDC, 140 mA / 28-44VDC, 85mA, double-sided 6×LED white, 5'600 K
153147	TrafficLED light module V4A, 18-28VDC, 80 mA / 28-44VDC, 50 mA, single-sided 6×LED blue, 470 nm
145604	TrafficLED light module V4A, 18-28VDC, 80 mA / 28-44VDC, 50 mA 50 mA, single-sided 6×LED orange, 600-609 nm
146904	TrafficLED light module V4A, 18-28VDC, 80 mA / 28-44VDC, 50mA, single-sided 6×LED white, 5'600 K
142301	TrafficLED lower section Ø 120×65 mm, 1 KV M16 (Ø 4-9) casing plastic anthracite with adjustment ring
142302	TrafficLED lower section Ø 120×65 mm, 2 KV M16 (Ø 4-9) casing plastic anthracite with adjustment ring
148704	TrafficLED lower section Ø 120×65 mm, 1 KV M16 (system cable), casing plastic anthracite with adjustment ring
148705	TrafficLED lower section Ø 120×65 mm, 2 KV M16 (system cable), casing plastic anthracite with adjustment ring
141481	TrafficLED blind cover V4A, Ø 113.2×27.5 mm incl. sealing and screw
140783	TrafficLED blind cover PP, Ø 113.8×4.9 mm plastic white (suitable for temporary cover only)
037712	Leveling support V2A complete to TrafficLED/CircLED range 85-168 mm
173496	System cable TPE Traffic/CircLED black, halogen-free 2×2.5 mm <sup>2</sup> , Ø 8.2 mm, strands: red, black

Other versions on request



## CircLED recessed light

CircLED is used for specific applications, mounted as wall- or floorlamp. Main focus is the roundabout lighting, where it is used as security, control and design lighting. Used in addition to many other uses as path lighting (floor or wall mounting). The CircLED is available with integrated light optics as well as in three light colours. It should be noted that the CircLED is only partially suitable for permanent drive-over and snowplough operation.

## System description

Analogical to TrafficLED, the CircLED will be flush mounted. The casing is made of chrome steel and the assembly has to be effected directly in the subgrade (asphalt, concrete, gravel, ground or the like).

## Connection technology

The operating voltage is 18-44VDC (low voltage). The current is transmitted from the supply line (2x2.5mm<sup>2</sup>) in a suitable installation pipe and is inserted in the lower part. A clamp is used to connect the upper part, which is filled reversibly and screwed together.

## Support in the fight against light pollution

Using CircLED helps to fight increasing light pollution. The light guidance is designed in such a way that the light output is only aimed at the defined and desired direction.

## High energy efficiency to reduce costs

Sophisticated electronics with latest LED technology is leading to a very low power consumption. The total power consumption for an average roundabout of 20 pieces CircLED is similar to a single 60W bulb.

## Sealing technology

The overall design of the individual components was based on a high degree of impermeability. Protection class IP68 is attained provided the assembly is performed by experts.

## Control units

The control units required for supplying and/or controlling the light modules are very small and space-saving and can usually be integrated in existing distribution systems or control cabinets. A small distributor may be installed as needed (see page 24).

## Product documentation

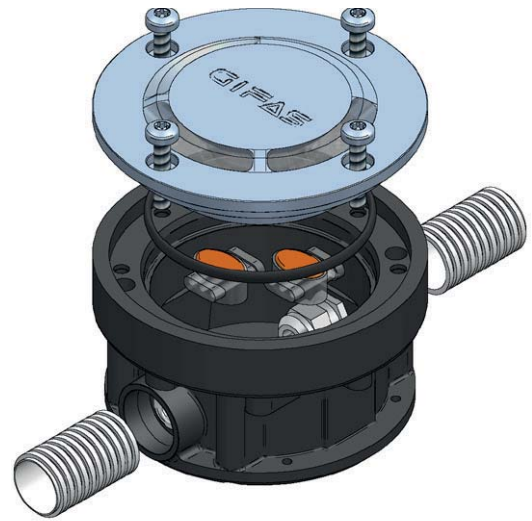
### Installation instructions



### Reference list







## Technical data

270° circular emission along a light strip (16 LED)

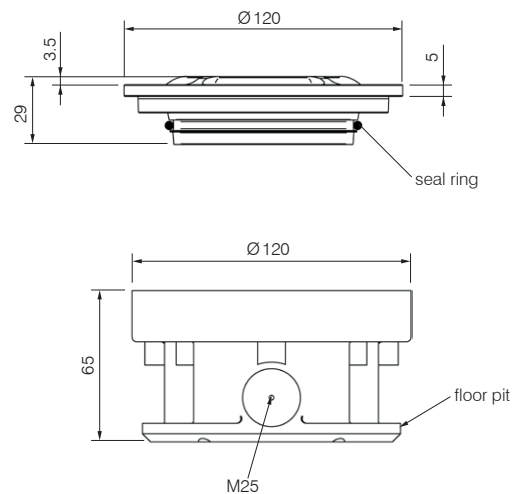
Light colour:	white (5'600 K), blue (470 nm), orange (606 nm)
Light intensity:	20 cd (white)
Illuminant:	16 LED with integrated optic
Operating life LED:	50'000h
Protection category:	IP68
Protection class:	III
Operating voltage:	24VDC (range 18-44VDC)
Power consumption:	130 mA @ 24 VDC
Diameter:	120 mm
Height with floor pit:	73.5 mm
Upper part:	chrome steel V4A
Lower section:	IXEF glass-fibre reinforced polyarylamide, black
Height over road surface level:	3.5 mm
Temperature resistance:	-30°C to +55°C
Axle load:	B125 according DIN EN124

Certificates, reference lists on request.

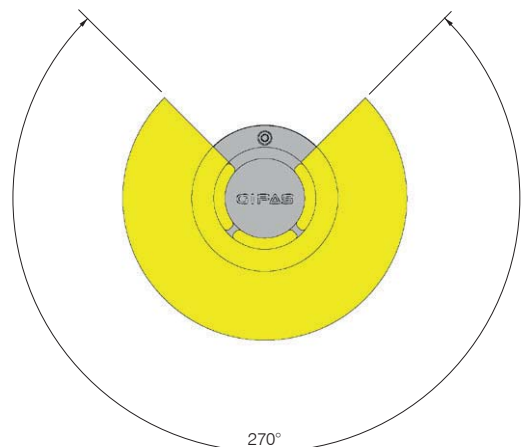
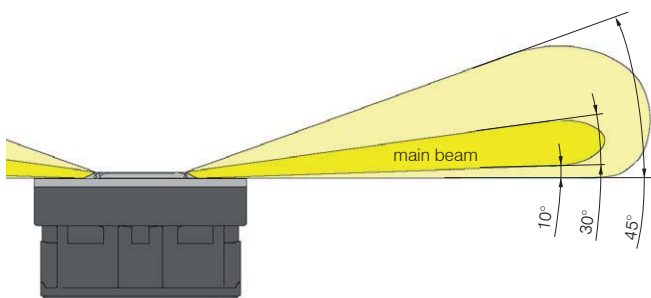
## The CircLED

- lower part made of special plastic IXEF
- upper part made of stainless steel
- electronics completely sealed
- The lightness of the light modules is easily adjustable by the control unit and can be manipulated by the automatically light control or direct control from tunnel centre office.

## One-components CircLED



## Diagram light emission





*Roundabout Oftringen*



*Roundabout Buriel*



*Zurich Hardbrücke*



*Zurich Hardbrücke*



*CircLED*



*Entry Wattwil*





Item no. 036106



Item no. 038311



Item no. 156537



## Product range CircLED

Item no.	Description
860156	CircLED light module V4A, 130mA @ 24VDC (20-48 VDC), white, 5'600 K, 16 Power LED complete sealed
860160	CircLED light module V4A, 130mA @ 24VDC (20-48 VDC), white, 3'500 K, 16 Power LED complete sealed
860157	CircLED light module V4A, 130mA @ 24VDC (20-48 VDC), blue, 470 nm, 16 Power LED complete sealed
860158	CircLED light module V4A, 130mA @ 24VDC (20-48 VDC), orange, 609 nm, 16 Power LED, complete sealed
031353	CircLED lower section Ø 120×65 mm, 1 KV M16 (Ø 4-9) casing plastic anthracite
036106	CircLED lower section Ø 120×65 mm, 2 KV M16 (Ø 4-9) casing plastic anthracite
153149	CircLED lower section Ø 120×65 mm, 1 KV M16 (system cable), casing plastic anthracite
153150	CircLED lower section Ø 120×65 mm, 2 KV M16 (system cable), casing plastic anthracite
156537	CircLED blind cover V4A, Ø 120×20.2mm incl. sealing and screw
038311	CircLED blind cover PP, Ø 120×7/12mm plastic white (suitable for temporary cover only)
173496	System cable TPE Traffic/CircLED black, halogen-free 2×2.5mm <sup>2</sup> , Ø 8.2mm, strands: red, black

Other versions on request

## Assembling jig for CircLED

GIFAS provides a suitable assembling jig for installing the CircLED on loan. This makes it possible to adjust to the ground level exactly and to optimise the relocation of the component.



Item no.	Description
018821	Assembling jig CircLED (on loan by GIFAS)



In contrast to the looped-through current transmission, as in the MarkLED system, the conventional wired system is used for the SecuLED product series. The modules can be wired directly and can be looped. The two-part construction facilitates the maintenance and repair effort massively.

When laying highly flammable and heat-resistant cables, grooves must be milled into the pavement or introduced in pipes designed for new plants for subsequent installation.

The lamp modules are installed on the kerb in the immediate proximity of the edge of the road. The brightness of the lamp modules can be easily adjusted using the control units and can be controlled in all areas via an automatic light control system or direct control from the tunnel monitoring and control complex.

## Mounting plate

The engineering design takes into account the various supply and mounting requirements.

Three enclosed cable sleeves, formed by way of injection moulding have been provided during manufacture for the cables to be fed through. The four attachment points have easily breakable seals over them. The diameter of the screws should be 4-5 mm.

The upper part of the mounting plate is sealed using two circular labyrinth seals. The upper part is attached in the threaded socket of the mounting plate using two captive screws.

## SecuLED – cable connection

Upper part made of polyamide, fully fitted in accordance with selection, electronics encapsulated with freely accessible 2.5mm<sup>2</sup> spring-type clamps, with direct looping. Mounting plate made of polyamide, two surrounding O-ring seals, sealed cable inlets (for 2×2.5mm<sup>2</sup> cables), four sealed mounting holes of diameter 5 mm.

## Connection

The cables are connected by using spring-type clamps. A separate clamp is provided for the supply line and additional cables. The cables can be disconnected at any time by applying slight pressure to the release mechanisms.

## Seals

The individual components have been engineered to ensure a high level of leak-tightness. Professional installation assumed.

## Controls

The control units required for supplying and/or controlling the lamp modules are very small, require very little space, and can usually be integrated into existing junction boxes or control cabinets. A small junction box can be mounted in a suitable location if required.

## Product documentation

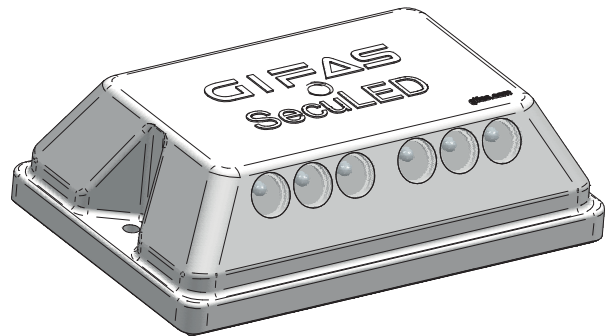
### Installation instructions



### Declaration of conformity






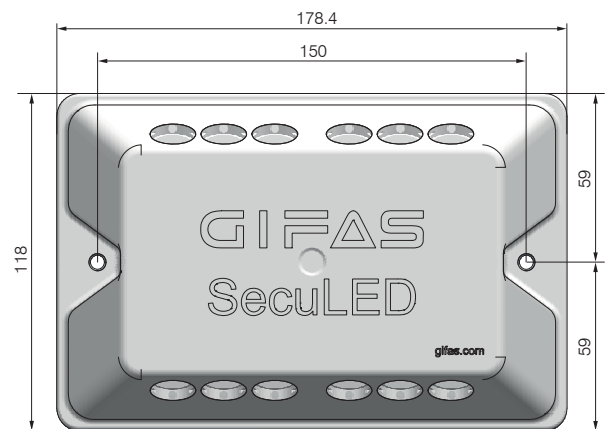
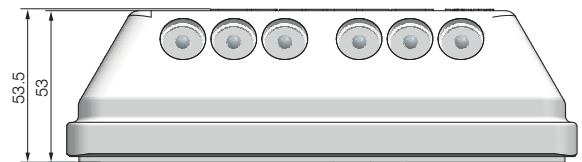


## Technical data

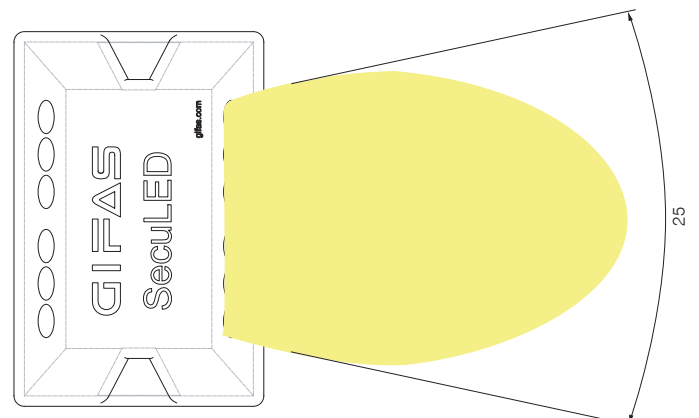
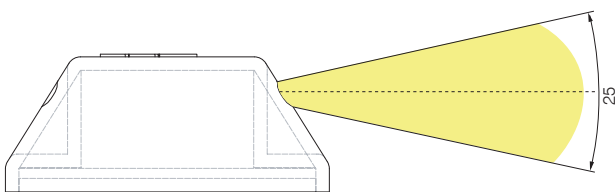
Light colour:	white (5'100K)
Light intensity:	30 cd
Illuminant:	12 LED
Operating life LED:	50'000h
Protection category:	IP67
Protection class:	III
Operating voltage:	24VDC (range 16-40VDC)
Power consumption:	40mA
Dimensions (l×w×h):	178.4×118×53.5mm
Upper part:	polyamide, white
Lower part:	polyamide, white

 A detailed datasheet from system components is available on request.

## One-components SecuLED



## Diagram light emission





*Tunnel Gubrist*



*Tunnel Gubrist*



*Tunnel St. Maurice, Valais*



*Tunnel St. Maurice, Valais*



*Cleaning tunnel*



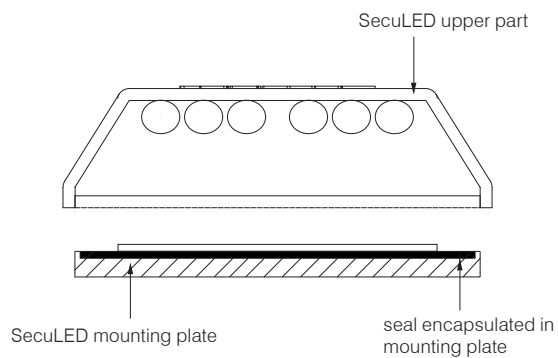
*Cleaning tunnel*



## Product range SecuLED

Item no.	Description
860462	SecuLED light module 40 mA/double-sided 6×white, 5'100 K
860463	SecuLED light module 60 mA/6×white, 5'100 K/6×red, 625 nm
860464	SecuLED light module 80 mA/double-sided 6×green, 525 nm
860465	SecuLED light module 80 mA/double-sided 6×blue, 470 nm

*Other versions on request*



## 4-channel control unit



The control unit for all GIFAS systems is designed for 4 output lines. Each channel can be loaded with up to 10A.

- **Supply:** A 230VAC/24-48VDC power supply device with a nominal output current of 40 A is installed upstream from the control unit.
- **Error messages:** Each channel has a relay with SPDT (potential free) assigned to the signaling of error messages.
- **External blinking contacts:** By default, two external flashing signals (24-60VDC) can be connected and transferred to the outgoing lines (synchronisation with flashing signal).
- **Operating mode:** The control unit has 8 or 31 different modes of operation.
- **Failure rate:** By failure rate detection, the lights can be tested for their functionality. The control unit measures the total power consumption of the respective channel. If the power consumption drops to a preset value, the fault message can be detected via a changeover contact (potential-free).
- **Functions:** One of the following functions can be assigned to each channel in each mode:
  - Continuous lighting: 100 %
  - Dimming: adjustable from 1-99 %
  - Flash: adjustable from 0.1-9.9Hz
  - Lightning: adjustable from 1-99ms
  - Running light: running light direction, dimming 1-99%, Light duty cycle 100ms-10sek, delay in lighting 100ms-10sek, Switch-on delay 0-999sek, duty cycle 0-999sek
  - Off
- **Programming:** the control unit can be optionally parametrised and read out via the web interface or the optionally available radio programming unit.
  - Web interface: if the control unit is connected to the network via RJ45 Cat. 6a, all parameters can be set and read out via a web browser.
  - Radio programming unit: All parameters can also be set by the radio programming unit.

### Technical data

Protection category:	IP66
Rated power max.:	1'920VA
Input voltage:	18-48VDC
Supply current:	40A, 4 channels à 10A
Power supply:	external
Dimensions:	330×230×110mm

## Remote control to 4-channel control unit



Programming device with menu guide for set-up, programming and status recognition of the control unit. Communication with the control unit occurs through radio.

All necessary functions can be set up and assigned through the menu structure. No special knowledge is required to operate it. The connection between the control unit and the programming device is bi-directional, i.e. the current settings can be transferred from one to the other.

The buttons «↑», «↓», «☒» and «✓» are used to navigate the system. The range is approx. 3m.

The menu is available in 4 languages: German, English, French and Italian.

### Technical data

Material:	ABS
Protection category:	IP40
Protection class:	III
Radio frequency:	2.4-2.525GHz
Operating voltage:	4.5VDC, 3 pcs. batteries type AAA
Life of battery:	> 1 year in standby mode
Dimensions (WxHxD):	73×140×32mm
Colour:	graphite grey similar to RAL 7024

Item no.	Description
860594	Control unit 4-channel IP66, 18-48VDC, 4×10A ready for installation in housing of cast aluminium 330×230×110mm, excl. power pack

Item no.	Description
860460	Remote control complete for the control unit 4-channel



## Power pack for control unit 4-channel



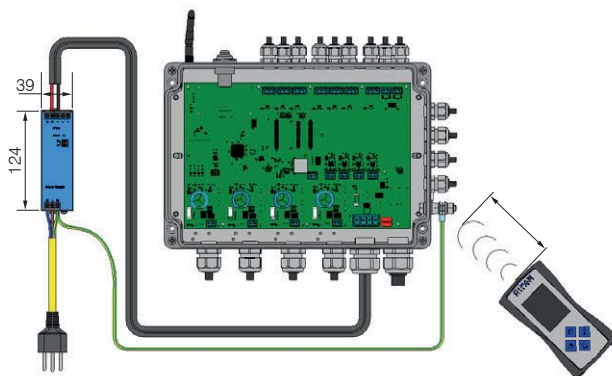
A 230VAC/24/36/48VDC power pack is installed upstream from the 4-channel control unit. The power pack is equipped with integrated protection against overloading and short-circuiting, with automatic or manual reset.

The power pack conforms to CEE regulations and also has UL and/or CSA approval.

### Technical data

Protection category:	IP20 (with additional cover IP42)
Protection class:	I
Input voltage:	230 VAC (range 100-240 VAC)
Output voltage:	24/36/48 VDC
Output current:	10/20 A
Connections primary:	screw terminals 4 mm <sup>2</sup>
Connections secondary:	screw terminals 4 mm <sup>2</sup>
Status display:	LED green
Installation:	quick fastening for DIN rail 35 mm
Dimensions (W×H×D):	39×124×117 mm

 A detailed datasheet on the power pack is available on request



Item no.	Description
163193	Power pack 230 VAC/24 VDC-10 A/240 W 39×124×117 mm
136629	Power pack 230 VAC/24 VDC-20 A/480 W 65×124×127 mm
180867	Power pack 230 VAC/48 VDC-20 A/960 W 125×124×127 mm

Other versions on request

## Cold conductor monitoring



The cold conductor monitoring is used for detecting defective installations or lights that are not connected. The monitoring is automatically activated as soon as the lights are switched off.

- **Feeding:** A power pack 230VAC/18-48VDC with a rated output current of max. 10A is connected upstream of the cold conductor monitoring. The level of the output voltage of the power pack depends on the marking light used in this case.
- **Fault signal:** The cold conductor monitoring has two relays with change-over contact (potential-free) to signal fault messages for voltage interruption (for example, failure of the power supply unit) and exceeding of the failure rate (for example defect in the control unit installation).
- **Functions:** In every cold conductor monitoring, the threshold for the max. failure rate detection can be set individually in percentage. The adjustment range is 10-70% and can be adjusted in 10% increments.
- **Programming:** Programming is done directly via the programming buttons on the control board.

### Technical data

Protection category:	IP66
Rated power max.:	480 VA
Input voltage:	18-48 VDC
Supply current:	10 A
Power supply:	extern
Dimensions (W×H×D):	160×100×80 mm

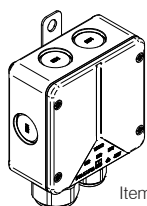
Item no.	Description
860603	Cold conductor monitoring, 18-48 VDC, 10 A ready for installation in housing of cast aluminium 160×100×80 mm, excl. power pack

## Junction boxes

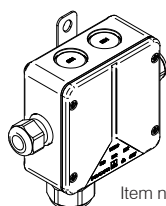


In order to get from the control centers to the shoulder, an appropriate supply line has to be pulled in. It starts at the control center and is led through conduits to the shoulder, or under the shoulder respectively. A junction box (usually E30, fireproof) is installed at that point from where the two special stranded cables are laid on the shoulder.

The type of junction box used depends on the type of supply line, as well as on how many channels lead away from the junction box.



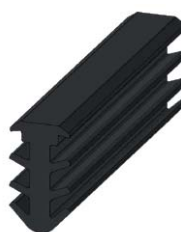
Item no. 183801



Item no. 191781

Item no.	Description
183801	Fire-proof junction box E30 - E90 type BFA2 100×100×50 mm/3×10 mm <sup>2</sup>
191781	Fire-proof junction box E30 - E90 type BFA2 100×100×50 mm/3×6 mm <sup>2</sup>

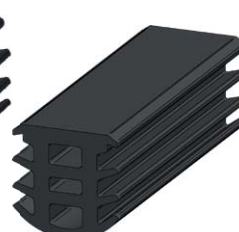
## System profile



Item no. 116753



Item no. 140862



Item no. 155809

A finish is needed which can be inserted after the system cable for closure into the groove.

The system profile will fit self-locking in grooves with width of 6-16 mm. The system profile is made out of a halogen-free EPDM material.

### Technical data

Material properties:	halogen-free, no corrosive and toxic gases
Shore hardness A:	70° ±5%
Special weight:	1.23 kg/l
Elongation at break:	237% DIN 53504
Breaking stress:	11.2 MPa DIN 53504

Item no. 116753	
Exterior dimensions:	9.3 mm × 17.1 mm
Groove width:	6 - 8 mm
Nominal section:	89 mm <sup>2</sup>
Weight:	109 kg/km

Item no. 140862	
Exterior dimensions:	13 mm × 17.1 mm
Groove width:	10 - 11.2 mm
Nominal section:	146 mm <sup>2</sup>
Weight:	177 kg/km

Item no. 155809	
Exterior dimensions:	17.35 mm × 17.5 mm
Groove width:	12 - 15 mm
Nominal section:	171 mm <sup>2</sup>
Weight:	254 kg/km

## Installation material

### Protective hose

Depending on the type of installation, the system cable can also be conducted in a conduit (fluted, halogen-free).

We are glad to advise you for specific projects!



Item no. 035976



Item no. 128266

Item no.	Description
035976	Conduit PP, Ø25/19 mm, high flexible VE=100 m
128266	Protective hose PA6, Ø21.2/16.5 mm, flexible VE=50 m

Item no.	Description
116753	Joint profile EPDM 70° Shore, for groove 6-8 mm 9.3 × 17.1 mm, black
140862	Joint profile EPDM 70° Shore, for groove 10-11.2 mm 13 × 17.1 mm, black
155809	Joint profile EPDM 70° Shore, for groove 12-15 mm 17.35 × 17.5 mm, black

## Joint sealing compound



The recommended system sealing compound is heated to 160°–180° C while being constantly mixed. The compound is applied using a spouted container or grouting lance. Excess compound must be removed by scraping once it has fully cooled.

### Technical Data

Colour:	black
Form of delivery:	10 kg box
Sealing temperature:	160° C - 180° C
Weight per unit volume:	1.7 kg / dm

Item no.	Description
028303	Joint sealing compound CTW Duro Stabil Container 10 kg

### Lime Mortar

In order to install the lower part of the TrafficLED and CircLED, you need lime mortar to fill in around the lower part. For each lower part, you will need approximately 0.7 l (~1.17 kg).

Item no.	Description
161035	Lime mortar Polifix Plus L Container 25 kg

### Insulating gel

When not mounted on the wall, the box must be cast with removable sealing compound, e.g. Bluegel (Item no. 166534 1 l container). First seal the pipes so that they are not blocked by the sealing compound!



Item no.	Description
166534	Insulating gel, solvent-free, VE=bottle à 1 litre 0.15 litres are required for each LED module (CircLED / TrafficLED)

## Adhesive and sealant to module MarkLED



The current collector MarkLED is glued to the base with the help of the sealant and adhesive. Our adhesive is a single-component adhesive that vulcanises itself into an elastic compound as it reacts to the air humidity. It also has no silicone or solvents.

### Technical data

Basis:	MS-Polymer
Cross-linking system:	polymerisation through air humidity
Temperature resistance:	-40° C to +90° C
Processing temperature:	approx. +5° C to +30° C
Color:	pebble gray
Processing:	using a hand spray gun
Packaging:	cartridge of 290 ml

Item no.	Description
020157	Adhesive and sealant hybrid pebble grey, 290 ml Permafix 153



### Guard plate to system MarkLED

In winter, there is often the problem that the snowploughs touch the signal units when entering and exiting the tunnels. That entails that the MarkLED can be sheered off and should be exchanged. Against it we can offer a protective plate. That protects the first MarkLED's at the entrance and exit of the tunnels.

Item no.	Description
024446	Guard plate V4A to MarkLED, 190×150×24 mm
024676	Countersunk screw V4A with I-6Kt. without shaft M8×70 mm
024677	Nylon plug Fischer M8-S×50 mm
019180	Nylon plug Fischer Ø6×35 mm, without surrounding
019290	Chipboard screw V4A, Ø5×80/50 mm



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