

Optical guidance systems

1108/2

... for a safe traffic guidance

for a save



traffic

guidance

Your wish is our command

Optical control equipment system for a safe traffic guidance



Why illuminate lane markings?

An optical guidance mechanism serves the improved recognition of the lanes on motorways and in tunnels, especially under vague lighting conditions. Particularly at night (or fog), the signal units contribute to a considerable degree to more security in the traffic.

During the last years, GIFAS-Electric set apart very intensive with new development and advancement of optical guidance systems. Thereby, made experiences as well as inputs of recognized specialised committees benefitted. This merging of theory and practice made it possible for GIFAS-Electric to optimize the existing systems regarding the criteria "costs, functionality and maintenance", and to make them high-end-systems made in Switzerland.

Optical guidance systems of GIFAS-Electric are characterised by their technical skills as well as by the maximum of customer comfort (customized approaches, accompanied course of project, documentations, certificates, after-sales-services).

Assortement overview

System *MarkLED*®

Pages 4-6

Features:

- the new *MarkLED*® – pluggable system
- small, flat, elegant, round shape
- protection category IP68



System *SecuLED*®

Page 7

Features:

- cable-connected system
- two-piece, modular structure (baseplate/casing)
- protection category IP67
- 2 sizes:
 - 6-12 LED = *SecuLED*® I
 - 3-6 LED = *SecuLED*® II



System *FlatLED*®

Pages 8-9

Features:

- over-mobile under-floor-system
- absolutely flat with carriageway level
- protection category IP68



Equipment control system

Pages 10-11

Features:

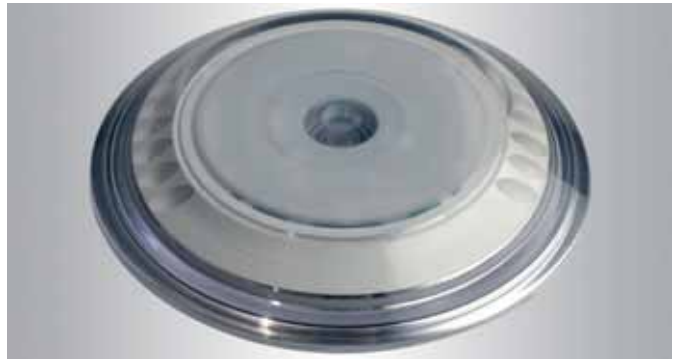
- can be used for all systems
- very small space requirement
- protection category IP65
- 2 types
 - control unit 4-channel (3 components:
 - power supply unit, control unit, remote control)
 - control unit 1-channel (1 component with integrated power supply unit)



Optical guidance system *MarkLED*[®]



MarkLED[®] Upper and lower part - pluggable



MarkLED[®] Upper part

System specification

Further development

The experiences and the know-how made with over 10'000 installed units as well as the adaptation of to the new directives led to a further development of the system *MarkLED*[®]. The technical innovations concern in particular the **modified light exit**, the **improved electronic**, the **new sealing compound** and the **newest LED-technology**.

The consequence is, that we **fulfil the directions of** «Bundesanstalt für Strassenwesen (**BAST – Deutschland**)» regarding the angle of reflected beam and the characteristics of material. Thanks to the use of connectors between upper and lower part, with a point of rupture at the braid, the **density is increasing** in case of damage through riding over. With it, the maintenance costs can considerably be reduced because the damaged upper parts do not have to be replaced immediately, and nevertheless, the lower parts wouldn't be damaged additionally. The use of the newest LED-technology led to a **reduction of the power requirement** (from 80 mA to **40 mA per module**) and a simultaneous increase of the light strength per module of approx. 5%. That reduces the costs, because newly the cord length **per output line** allows a **maximum of approx. 62 modules** (instead of approx. 31).

Altogether we can proudly say that our system *MarkLED*[®] can be installed yet easier. Newly however also the maintenance is more comfortable. This is a logical sequence of innovation and of our effort to be always „best in class“!

The new *MarkLED*[®] – Pluggable system

- **Elegant, nice, flat, round shape** with case made of a crystal clear special plastic (Makrolon)
- **External surface is nano-coated additionally** (antistatic for high dirt repulsion and corrosion protection)
- **Electronics inserted from bottom up**
- **Can be equipped single or double sided**
- **Completely surrounded by neutral, white sealing compound**
- **Installation of the signal units is done on or in direct proximity of the edge of curb**
- **Brightness of the signal units is easily adjustable by the control unit and can be controlled in all areas via an automatic light control system or via direct control from the tunnel control center**

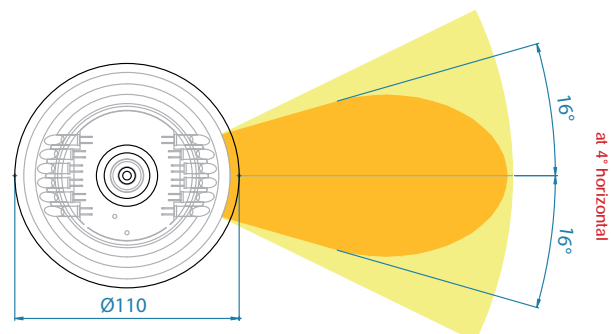
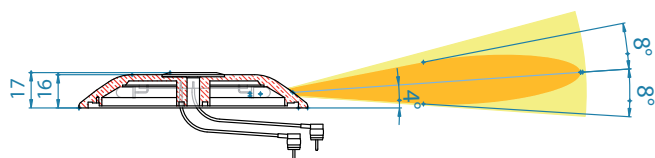
Current collector

The current collector (consisting of upper and lower part) combines various system functions.

1. Admission of the 2-pole feed cable (special flexible wires) in prepared "bed" with shape matching the flexible cable (impermeability)
2. Current transmission from the feed cable to the contact pin
3. The assembled current collector is put into the groove using sticking and sealing compound.
4. The "plate" makes the clean base for the signal unit. Thus, unevenness of the constructional work can be corrected.

Schema of the light exit

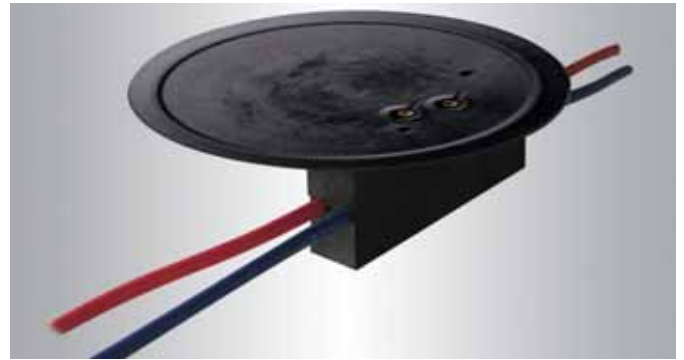
The system *MarkLED*[®] fulfils the directions of «Bundesanstalt für Strassenwesen (**BAST – Deutschland**)», what is certified by a corresponding test certificate.



System *MarkLED*[®] – Technical data



Electronic sealed with sealing compound



MarkLED[®] Lower part and current collector

Technical data

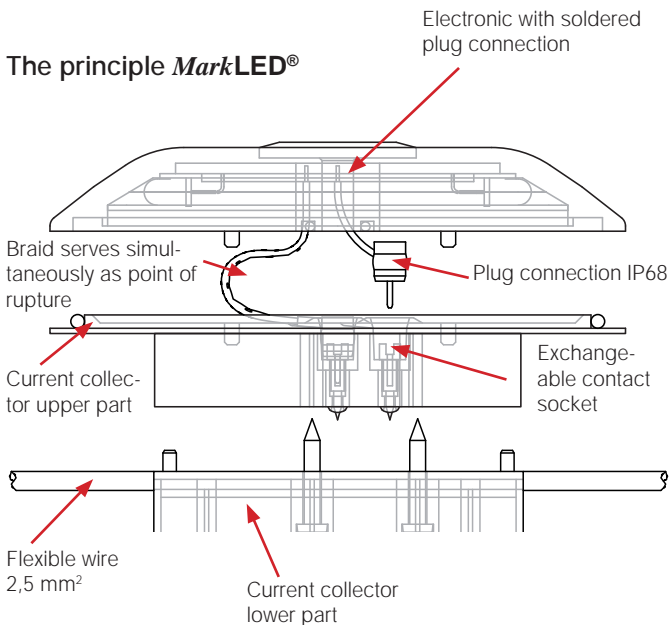
Connection technology

In order to ensure simple offsetting and removal of the signal units, we have given much attention to the connection technology.

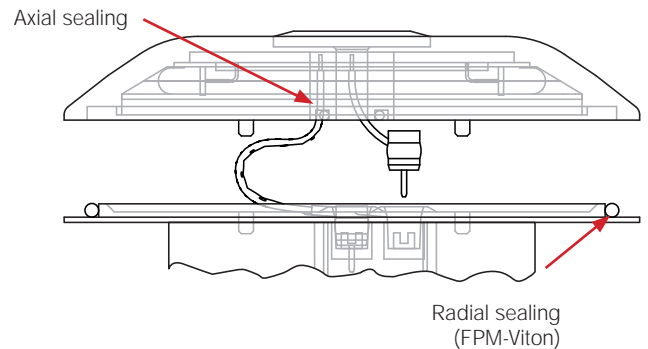
Sealing technology

The contact point on the current collector is protected against corrosive influences using three o-ring seals.

The principle *MarkLED*[®]



The principle



The pluggable construction and the arrangement of the seals have the task of ensuring **absolute waterproofing at the contact points** on the one hand and facilitate a simple exchange on the other hand. The accomplished examinations (**protection category IP68** = absolute dustproof and pressure water-proof) confirm this objective.

The operating voltage is 16–40 VDC (low voltage). The power is transmitted from the feeding cable (special flexible wires 2,5 mm²) via the contact socket (in the current collector) via cable and plug connection onto the printed circuit board in the *MarkLED*[®], on which the LEDs are soldered to.

Control units

The necessary control units for the power supply or regulation of the signal units are **space-saving** and designed for **installation in existing distribution systems**. If needed, a small distributor is installed in a suitable place. We offer control units with 4 channels as well as with 1 channel (details in our main catalogue).

Technical data signal unit *MarkLED*[®]

Single or double sided each with 6 LEDs	
Lamp colour:	white (according to the standard EN 12966-1:2002)
Light power:	30 cd
Protection category:	IP68
Protection class:	III
Electrical operating data:	24 VDC (range 16-40 VDC)
Power requirement:	40mA
Colour:	colourless, crystal clear
Dimensions:	Ø 110 mm, height 16 mm
Light exit:	approx. 9 mm above ground

System *MarkLED*[®] – Installation – Assortment



Installation of current collector on flexible wires



Sealing of groove with sealing compound

Installation

The system now takes effect due to the assembly procedure already introduced during development.

The optical guidance system *MarkLED*[®] is characterised by the fact, that also the installation affects itself for the owner and/or the operator. The advantage is a cost reduction, due to a **simple exchange of defective modules**.

The construction and installation processes are co-ordinated and optimized purposefully.

The installation procedure:

- Step 1: Set up of the control unit, cable run to road shoulder
- Step 2: Measuring of the locations
- Step 3: Milling dryly the groove in the road shoulder
- Step 4: Re-milling for the current collector
- Step 5: Laying out of the connection cable
- Step 6: Install current collector on flexible wires
- Step 7: Insert current collector in the groove using sticking and sealing compound and weight down
- Step 8: Insert fiber glass cord
- Step 9: Seal groove with bitumen grouting
- Step 10: Drill fixing hole \varnothing 5mm, insert peg
- Step 11: Put the contact pin of the upper part into the lower part
- Step 12: *MarkLED*[®] placed on top

Product selection

Art.-No.	Description
24833	Signal unit MarkLED[®] , double-sided 6x white, operating current 40 mA, including V4A 4.5x50 mm mounting screw, cover disk V4A \varnothing 30 mm and plug \varnothing 5 mm (packaging units 20 pieces)
26692	Signal unit MarkLED[®] , single-sided 6x white, operating current 20 mA, including V4A 4.5x50 mm mounting screw, cover disk V4A \varnothing 30 mm and plug \varnothing 5 mm (packaging units 20 pieces)
24847	Current collector I, for insert in concrete groove , consisting of upper and lower part, including V2A KA 30x20 mm mounting screws (packaging units 20 pieces)
26203	Current collector II, for insert in asphalt groove , consisting of upper and lower part, including V2A KA 30x20 mm mounting screws (packaging units 20 pieces)
16263	System cable for MarkLED[®] , braid 2.5 mm ² , red
16265	System cable for MarkLED[®] , braid 2.5 mm ² , dark blue
20669	Control unit 4-channel , ready for installation in hard rubber casing
21248	Control unit 1-channel , ready for installation in hard rubber casing
20320	Remote control , ready-for-use
59179	Power supply ready for installation

System *SecuLED*[®]

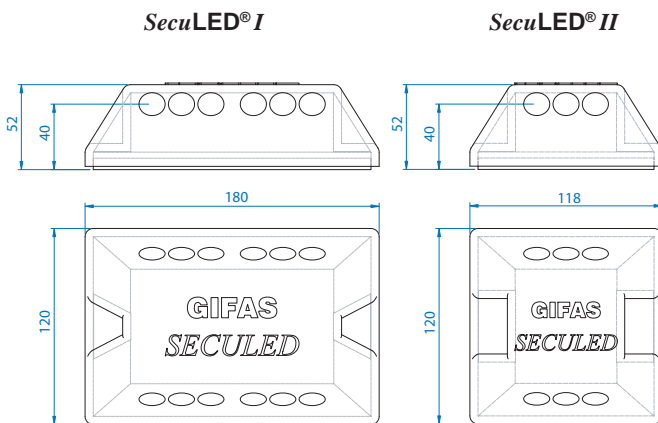


SecuLED[®] I

System specification

Proven system

In contrast to wireless current transmission such as the *MarkLED*[®] system, the *SecuLED*[®] product range uses the usual wired system. The modules can be cabled and branched directly. The two part assembly significantly eases the maintenance and repair costs. Furthermore, all casing parts are also treated with a dirt repelling and corrosion resistant coating (nano coating).



SecuLED[®] - wired connection

Upper part made of polyamide, already fitted according to choice, sealed electronics, with freely accessible spring-type clamps 2.5 mm², - 4 or 6 - with direct branching, V4A stainless cover screws.

Mounting plate made of polyamide, two circumferential o-seals, three cable inputs (for cable 2x2.5 mm²) sealed, four mounting drill holes Ø 5 mm sealed.

For laying the flame and temperature resistant cables, grooves must be cut in the pavement in the case of subsequent installation or pipes must be provided for new systems.

The installation of the signal units is done on or in direct proximity of the edge of curb. The brightness of the signal units is easily adjustable by the control unit and can be controlled in all areas via an automatic light control system or via direct control from the tunnel control center.



SecuLED[®] II

Installation

The signal units are installed on the curb. The distance to the edge of the carriageway is specified in every project and is dependent on the constructional situation. The two-part construction (mounting plate and casing part) facilitates the installation substantially.

The installation procedure:

- Step 1: Assembly of the control unit, cable routing to the shoulder
- Step 2: Measuring of the locations
- Step 3: Milling a groove in the shoulder
- Step 4: Drilling core hole Ø50mm (connection point)
- Step 5: Laying the cables in the groove including possible necessary covering (pipe or heat band)
- Step 6: Lead through connection ends (for mounting points)
- Step 7: Seal (close) groove
- Step 8: Install mounting plate (including foam underlays)
- Step 9: Connect upper part - attach *SecuLED*[®]

Technical data

• Signal unit *SecuLED I*[®]

Single or double sided each with 6 LEDs
 Lamp colour white (according to the standard EN 12966-1:2002)
 Light power: 30 cd
 Protection category: IP67
 Protection class: III
 Electrical operating data: 24 VDC (range 16-40 VDC)

Features: Casing (WxLxH: 120x180x52 mm) made of plastic, colour RAL 9003 (signal-white), two-part construction, equipped according to choice, sealed electronics, completely ready for connection

• Signal unit *SecuLED II*[®]

Single or double-sided each with 3 LEDs
 Lamp colour white (according to the standard EN 12966-1:2002)
 Light power: 16 cd
 Protection category: IP67
 Protection class: III
 Electrical operating data: 24 VDC (range 16-40 VDC)

Features: Casing (WxLxH: 120x118x52 mm) made of plastic, colour RAL 9003 (signal-white), two-part construction, equipped according to choice, sealed electronics, completely ready for connection

⇒ Request our detailed information.

System *FlatLED*®



System specification

FlatLED®

New application areas for marking lights are increasing. To take this needs into account, GIFAS has rounded off its sortiment with the *FlatLED*®.

The *FlatLED*® - The over-mobile under-floor-system

Marking elements for better recognition of obstacles, course of the lane or potential hazards. Can be used as roadway delimitation marking of center lines, marking pedestrian crossings, roundabouts and traffic islands.

FlatLED® for the runway: perfectly embedded in the road surface, without protruding elements - light emission guide via optical lenses. Suitable for traffic, over-mobile - even for the snow plough.

Casing made of special plastic Ø 120x65 mm, with cover plate Ø 120 x 22 mm (wearing part), fitted with pluggable LED electronics, completely sealed.

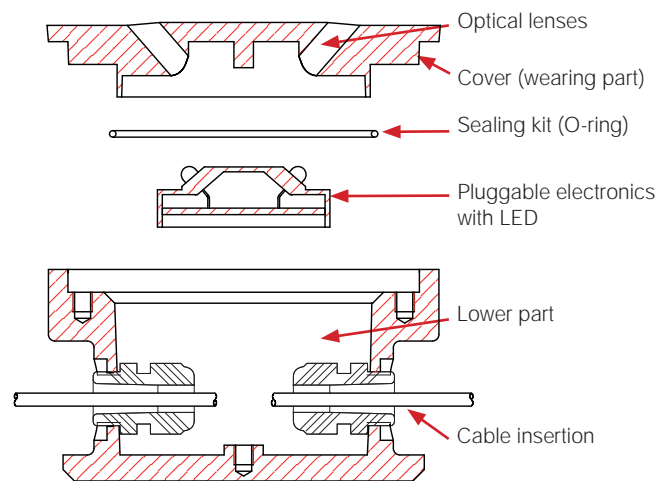
The lamp modules are installed directly in the road surface (asphalt, concrete or similar). The emission brightness (LED) can be controlled and adjusted via a control unit.



Technical information

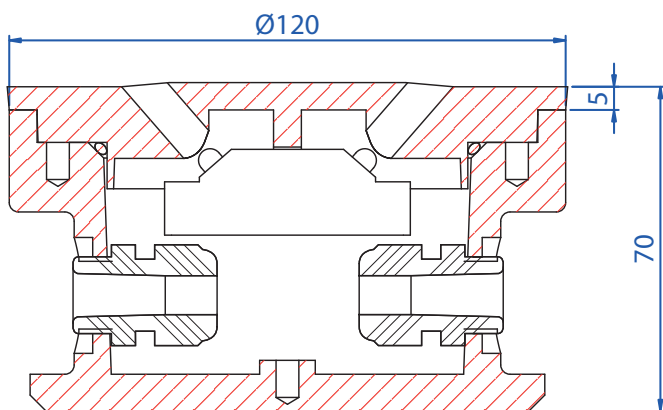
The principle

The complete product, assembled from the construction elements lower part, electronics with LED and cover plate. Additional material needed for installation such as screws (V4A), sealing etc. is supplied.

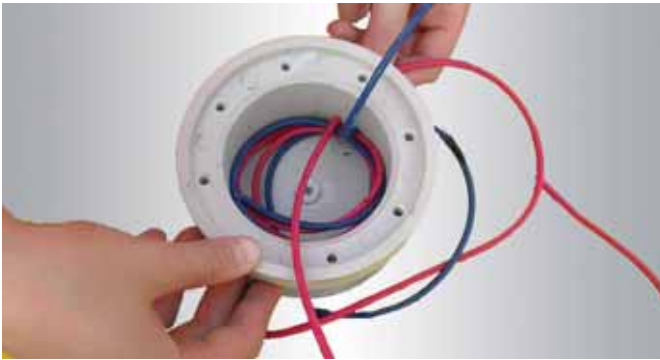


Connection technology

The connection is made using spring-type clamps. The input and output cables are fixed by their own clamps. The connections can be undone easily at any time with slight pressure on the unlocking devices. The polarity doesn't need to be considered.



System *FlatLED*[®]



Installation

The system now takes effect due to the assembly procedure already introduced during development. The optical guidance system FlatLED is characterised by the fact, that also the installation affects itself for the owner and/or the operator. The construction and installation processes are co-ordinated and optimized purposefully.

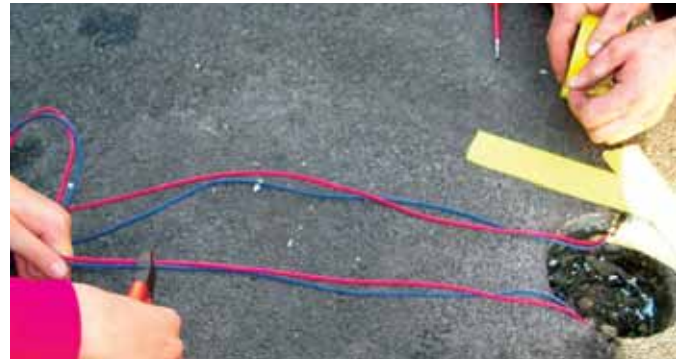
The installation procedure:

- Step 1: Preparatory work for assembly of the control unit and the cable routing
- Step 2: Measuring of the locations
- Step 3: Milling the groove in the road surface (dry)
- Step 4: Spray clean the core hole
- Step 5: Lay the connection cable
- Step 6: Install lower part in core hole (assembling jig) with 2-K-mortar (or suitable mortar)
- Step 7: Connection and assembly of the cover plate with LED
- Step 8: Seal (close) groove with bitumen sealing compound or 2-K-mortar

Fitting aid: For installation of the *FlatLED*[®] Gifas provides a corresponding assembly jig. Thus the level can be taken over precisely and the offset of the component can be optimized.

Art.-No.	Description
18821	Assembly jig <i>FlatLED</i> [®]

⇒ Request our detailed installation instructions for this.



Product selection

• Signal unit *FlatLED*[®]

- Single or double sided each with 6 LEDs
- Lamp colour white (according to standard EN 12966-1:2002) other colours on request
- Light power: 20 cd
- Protection category: IP68
- Protection class: III
- Electrical operating data: 24 VDC (range 16-40 VDC)

Features: Casing made of special plastic, temperature resistant up to -40°C. Units are over-mobile (test load with force Ø 30 mm = 4 metric tons/Surface pressure 30 metric tons). Cover colour RAL 7021 (black/grey), dimensions Ø 120x65 mm.

Art.-No.	Configuration	Operating current
18820	double-sided 6x white	80 mA
18992	single-sided 6x white	40 mA

Other colours and configurations on request.

• System cable for *FlatLED*[®]

Halogen free, electron beam cured braid. Very high temperature resistance (up to 250°C for a short time). Very good resistance in the case of fire.

Art.-No.	Description
16263	Braid <i>FlatLED</i> [®] , 2.5 mm ² , red
16265	Braid <i>FlatLED</i> [®] , 2.5 mm ² , dark blue

• Control unit

You will find the control unit components on pages 10 and 11.

Equipment control unit



Control unit 4-channel

The control unit is the central control for every optical guidance system of GIFAS-Electric. The 4-channel control unit is appropriate for 4 output channels. Each exit can be loaded with 2.5A. That corresponds to about 31 signal units (MarkLED, SecuLED or FlatLED).

- **Feeding:** under normal conditions, a power supply unit (230 VAC/ 24 VDC, 10A nominal output current) is upstream the control unit. (details page 11)
- **Fault signals:** a relay with change-over contact (floating) is assigned to each channel to signaling disturbances. The relay dropped, if a disturbance is present. These messages can be set up alternatively to single or total failure (by means of a micro-switch).
- **External flashing contact:** According to standard an external flashing signal is connectable and transferable to the output channel.
- **Operating modes:** the control unit has 5 different operating modes. The operator can select the operations mode by appropriate control.
- **Functions:** In each mode one of the following functions can be assigned to each channel:
 - Continuous lighting 100%
 - Dimming 1-99% adjustable
 - Blinking 0,1 – 9,9Hz adjustable
 - Flashing 1-99ms adjustable
- **Programming:** with the remote control (optional) every parameter can be adjusted. Communication takes place cordless by a radio-interface. If no remote control is available, all parameters can be adjusted by 3 programming keys on the control board (four-digit display).

Technical data:

The 4-channel control unit is built into a Gifas full-rubber-casing type 2516 with transparent cover.

Dimensions	250x160x90 mm (WxLxD)
Protection class	IP 65
Input voltage	24 VDC
Voltage range	18-40 VDC
Supply current	10 A
Load per channel max.	2.5 A



Remote control

Remote control with menu guidance for set-up, programming and recognition of the controls condition. The communication takes place over radio.

By the menu structure, similar to mobile phones, any function needed can be setted up. For operation, no special knowledge is necessary. The connection between control unit and remote control is bi-directional, i.e. the settings can be transferred mutually.

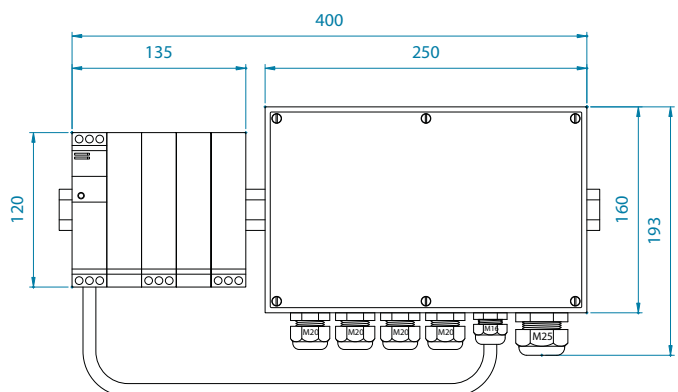
As navigation, there are the keys „↑“, „↓“, „☒“ und „✓“. The range amounts to about 3m.

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

Technical data:

Dimensions	63x140x31 mm (WxLxD)
Protection class	IP40
Protection type	III
Radio frequency	2400-2483 GHz
Operating voltage	3 VDC, 2 batteries type AA
Battery life	> 1 year (mode "stand-by")

⇒ Request our detailed specification for the control unit



Equipment control unit



Control unit 1-channel

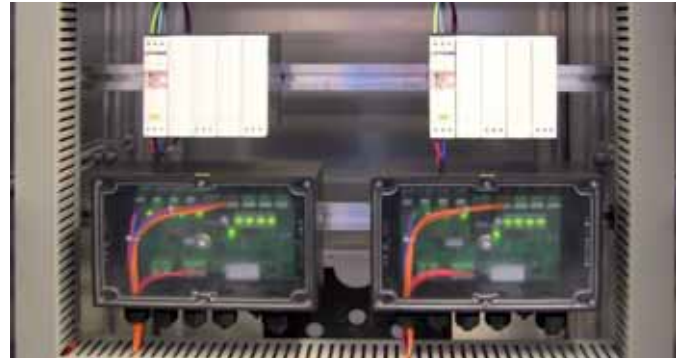
For simpler applications with a limited number of signal units, GIFAS-Electric invented a smaller type of control unit. This type has only one channel.

- **Feeding:** the control unit is feeded directly by 230V mains voltage. The operating voltage of 24 VDC is made from the input voltage (by an internal power supply unit).
- **Fault signals:** a breakdown reporting contact (floating) is assigned to the output channel.
- **External flashing contact:** According to standard an external flashing signal is connectable and transferable to the output channel.
- **Operating modes:** the control unit has 2 different operating modes. The operator can select the operations mode by appropriate control.
- **Functions:** In each mode one of the following functions can be assigned to each channel:
 - Continuous lighting 100%
 - Dimming 1-99% adjustable
 - Blinking 0,1 – 9,9Hz adjustable
 - Flashing 1-99ms adjustable
- **Programming:** All parameter can be configured by the 3 programming keys. (4-digits)

Technical data:

The 1-channel control unit is built into a Gifas full-rubber-casing type 2516 with transparent cover.

Dimensions	250x160x90 mm (WxD)
Protection class	IP 65
Input voltage	230 VAC (85-264 VAC)
Voltage range	24 VDC
Load per channel max.	2.5 A



Product selection

• **Control unit 4-channel**

In accordance with description on page 10 (left column).

Art.-No. Specification

20669	Control unit 4-channel, ready for installation in hard rubber casing
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• **Control unit 1-channel**

In accordance with description on page 11 (left column).

Art.-No. Specification

21248	Control unit 1-channel, ready for installation in hard rubber casing
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• **Remote control**

Remote control for the control unit 4-channel

Art.-No. Specification

20320	Remote control, ready-for-use
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• **Power supply unit**

With the power supply unit, the tension needed for the control unit 4-channel is prepared. The power supply unit has an integrated protection against overload and short-circuit, with automatic or manual resetting.

Input voltage	230 VAC (100-240 VAC)
Voltage range	24 VDC (+/- 10%)
Output current	10 A
Primary connections	screw clamping claws 2.5mm ²
Secondary connections	screw clamping claws 2.5mm ²

Dimensions	135x120x120 mm (WxD)
Installation	Quick connector for DIN rail 35mm

Art.-No. Specification

59179	Power supply ready for installation
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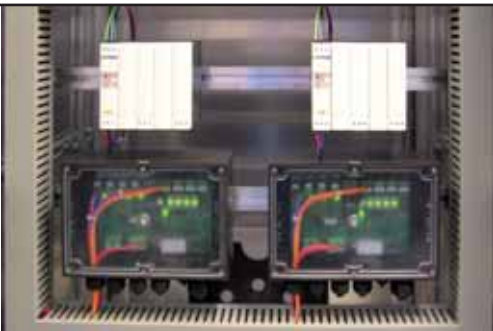
Application examples



Overview Gubrist-Tunnel, Zürich



View on installed signal unit type "SecuLED I"
Well visible the poured cable groove



Installed control units (including power supply units)



Overview Entlisberg-Tunnel, Zürich



Operability control of a fully-installed signal unit type
"MarkLED"