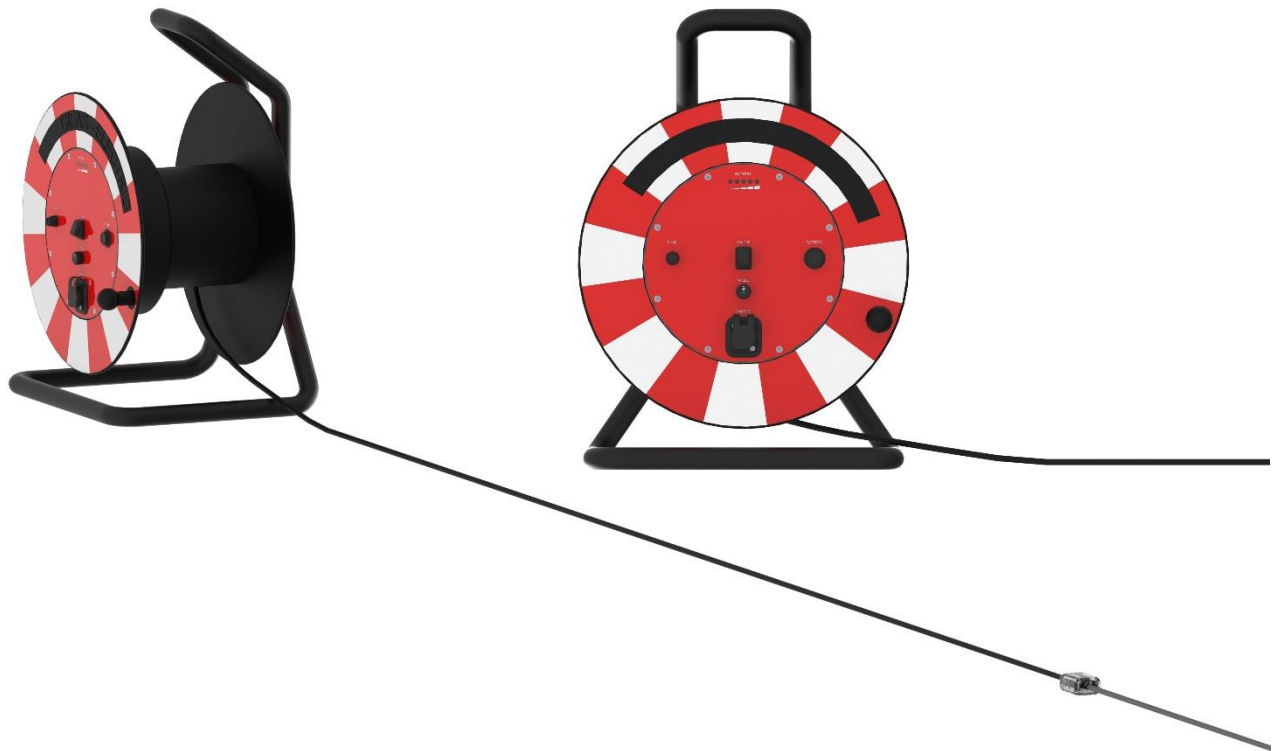


## RoadLED

### Manual



VERSION	MODIFICATIONS
1.0	First edition
1.1	Editorial changes
1.2	ADCA: Additions to rechargeable battery runtimes

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## 1 General information

### 1.1 Marking concept for hazards and hints

#### **Hazard**

Hazardous situation which will cause serious injury or even death if it is not prevented.

#### **Caution**

Hazardous situation which could cause slight to moderate injury if it is not prevented.

#### **Hint**

Indicates information which does not concern personal injury, e.g. hints in respect of material damage.

#### **Protective measures**

Increase safety by applying a protective measure.

### 1.2 Responsibilities of the operator

- Make sure that this document is always kept in a safe place in a legible form together with the product.
- Read these instructions carefully before first start-up of the product.
- This product has been developed and produced exclusively for the use indicated in these documents. Every other use, which is not mentioned explicitly, could affect the intactness of the product and/or could constitute a source of danger.
- The manufacturer rejects any liability for damage which has been caused by incorrect or non-intended use of the product.
- In countries, which do not belong to the European Community, the national legal reference regulations as well as the standards and regulations applicable in these countries have to be observed for warranty of a corresponding safety level.
- The installation has to be carried out according to the applicable regulations.
- The manufacturer assumes no liability for inexpert execution of installation as well as deformations which may occur during operation.
- The electric power supply has to be switched off before executing any action on the installation.
- Exclusively original parts of the manufacturer shall be used for maintenance. Maintenance work may be carried out by qualified staff only.
- All procedures which are not explicitly mentioned by the manufacturer in the instructions are not permitted.
- The packing material must not be stored within the reach of children as it could be a potential source of danger.

## 2 Introduction

To ensure proper installation, the following steps and notes must be complied with under all circumstances. Only this way can it be ensured that the product will work to complete satisfaction.

### Hint

Read all instructions before starting installation. Our sales department will be happy to answer any questions you may have.

### 2.1 Installation conditions product RoadLED

The RoadLED has been designed for outdoor application. Occasional immersion in shallow water (e.g. puddles) for a period of max. 8 hours is no problem for the light modules.

The luminaire modules can be driven over with a maximum wheel load of 5.0 t without damaging the housing.

### Hint

The connectors cannot be driven over and must be placed in a protected area.

### 2.2 Storage

No additional measures are required for storage. Ensure that the modules are protected from damage when packing them.

Ensure that the RoadLED is switched off and the battery is sufficiently charged (min. 50 – max. 80% of the overall capacity) during storage, in order to protect the battery from discharge. If the RoadLED is stored for a lengthy period, the charging condition must be checked at regular intervals. The self-discharge of 1% per month is extremely low, but highly dependent on temperature. Lithium-ion batteries should be recharged every 3 to 4 months to prevent deep discharge. The battery should always be recharged to min. 60% of the overall capacity after every use!

The storage temperature must be between -10°C to +25°C, in order to ensure a long battery lifetime.

### 2.3 Disposal of the device



This product must not be thrown in the garbage.

In accordance with official local and national regulations, this product is to be recycled appropriately.

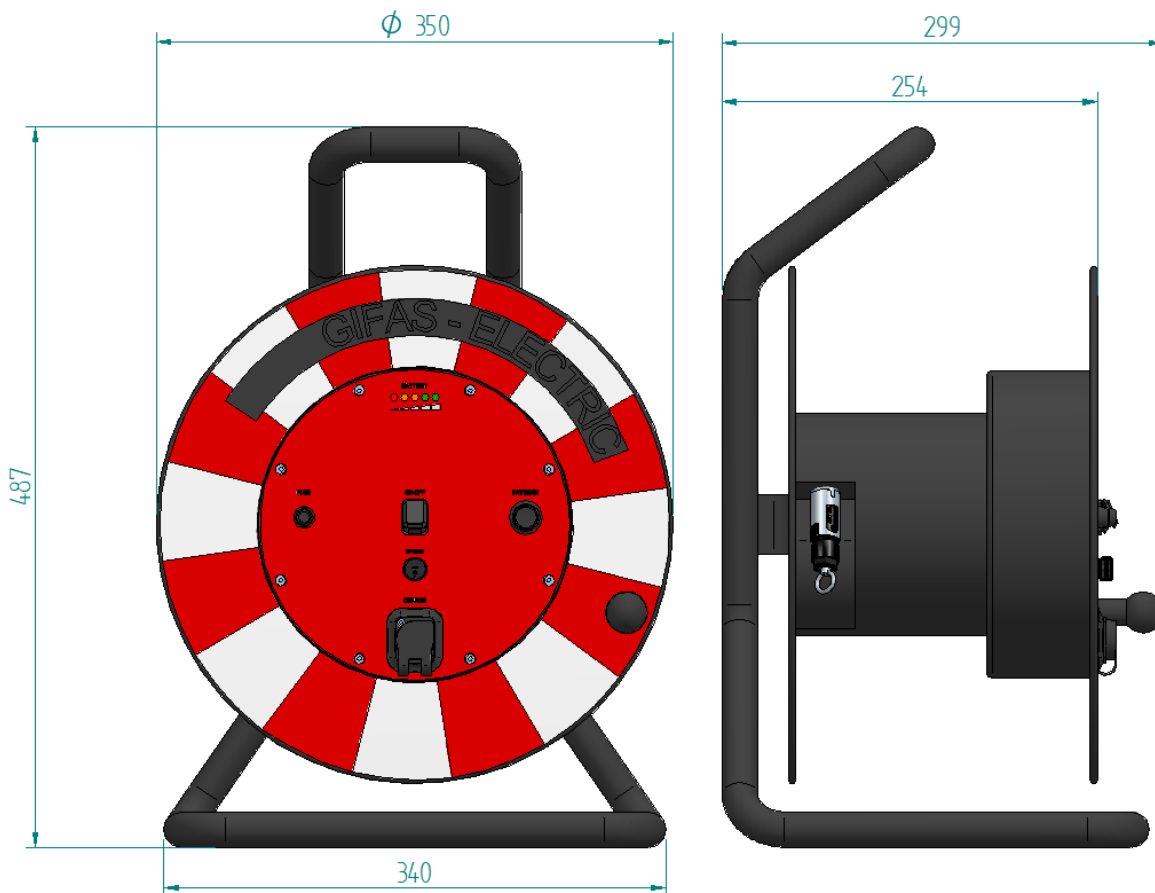
European directive 2012/19/EU; waste electrical and electronic equipment (WEEE).

### 3 Technical Data

#### 3.1 Technical Data cable reel

Housing material:	halogen-free hard rubber reel body, safety insulated
Frame material:	Solid tubular steel frame, black powder coated
Protection category:	IP55
Protection class:	II
Operating temperature range:	-20°C to +50°C
Total weight:	7.85kg
Dimensions:	350 x 299 x 487mm (L x W x H)
Guarantee:	According to General Conditions of Sale and Delivery

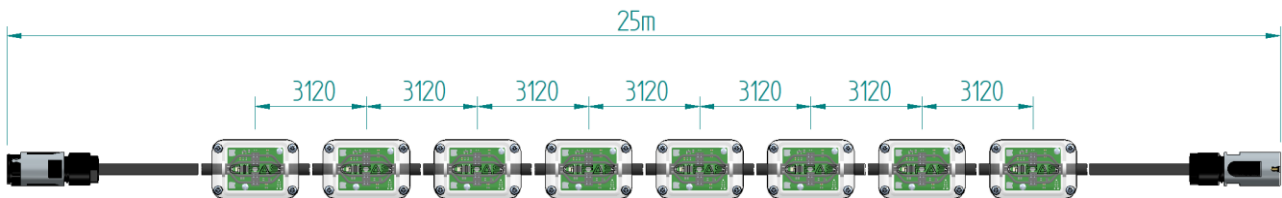
##### 3.1.1 Dimensions cable reel



### 3.2 Technical Data LED string 25 m, 8 light modules

Protection category:	IP67
Protection class:	III
Operating temperature range:	-20°C to +50°C
Total weight:	1.8kg
Total length:	25m
Distance of LED modules:	3.125m
Number of LED modules:	8 pcs.
Guarantee:	According to General Conditions of Sale and Delivery

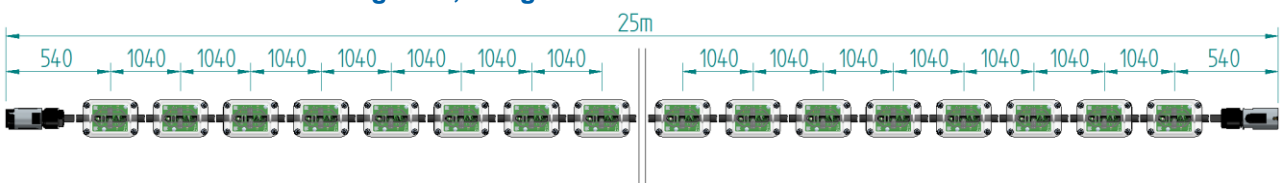
#### 3.2.1 Dimensions LED string 25 m, 8 light modules



### 3.3 Technical Data LED string 25 m, 24 light modules

Protection category:	IP67
Protection class:	III
Operating temperature range:	-20°C to +50°C
Total weight:	2.4kg
Total length:	25m
Distance LED modules:	1.040m
Number of LED modules:	24 pcs.
Guarantee:	According to General Conditions of Sale and Delivery

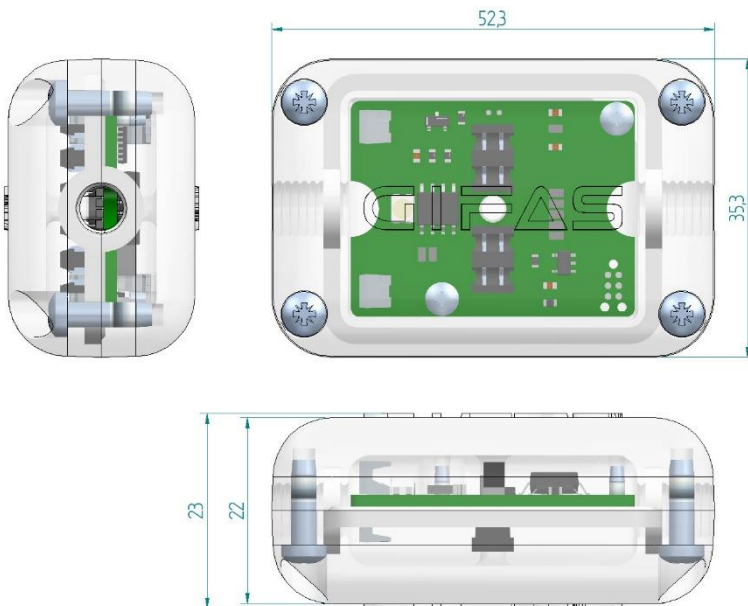
#### 3.2.1 Dimensions LED string 25 m, 24 light modules



### 3.4 Technical Data light module

Housing material:	Polycarbonate Lexan 164 R
Housing surface:	Transparent
Sealing material:	TPV Santoprene
Protection category:	IP67
Protection class:	III
Over-mobile, load capacity:	5.0t (maximum wheel load)
Operating temperature range:	-20°C to +50°C
Weight:	36g
Dimensions:	52,3 x 35,3 x 23mm (L x W x H)
LED Type:	Osram SideLED LY A67F / Osram TopLED LY E67F
LED number per light module:	4x Side LED / 1x Top LED / 1x Bottom LED
LED color:	Traffic yellow

#### 3.4.1 Dimensions light module



### 3.5 Technical Data battery

Battery Type:	Li-Ion battery
Battery design:	5S5P 11000mAh
Cell type:	RH18650 / 3,7V 2200mAh
Nominal battery voltage:	18.5V
Li-Ion battery capacity:	11000mAh / 203,5Wh
Charging time for full charge 230VAC:	6h
Charging time for full charge 12-24VDC:	6h
Operating time continuous light:	According to 3.6. rechargeable battery runtimes
Operating time flashing 1 Hz:	According to 3.6. rechargeable battery runtimes
Operating time running light:	According to 3.6. rechargeable battery runtimes
Lifetime:	700-1000 cycles > 80% of the initial capacity at 20°C
Operating temperature range:	-10°C to +50°C
Charging temperature range:	0°C to +40°C
Storage temperature:	-10°C to +25°C storage during max. 3 months without reloading



### 3.6 Rechargeable battery runtimes

The rechargeable battery runtimes were measured effectively..

Measurements were taken at room temperature and approx. 50% rH.

#### Hint

It should be noted that the capacity of a rechargeable battery can fluctuate slightly even when it is new and will decrease more or less quickly depending on the prevailing environmental conditions. This has a direct influence on the runtimes.

#### Hint

Listed below are the different operating modes at maximum configuration. If the number of light modules per system decreases, the rechargeable battery life increases accordingly.

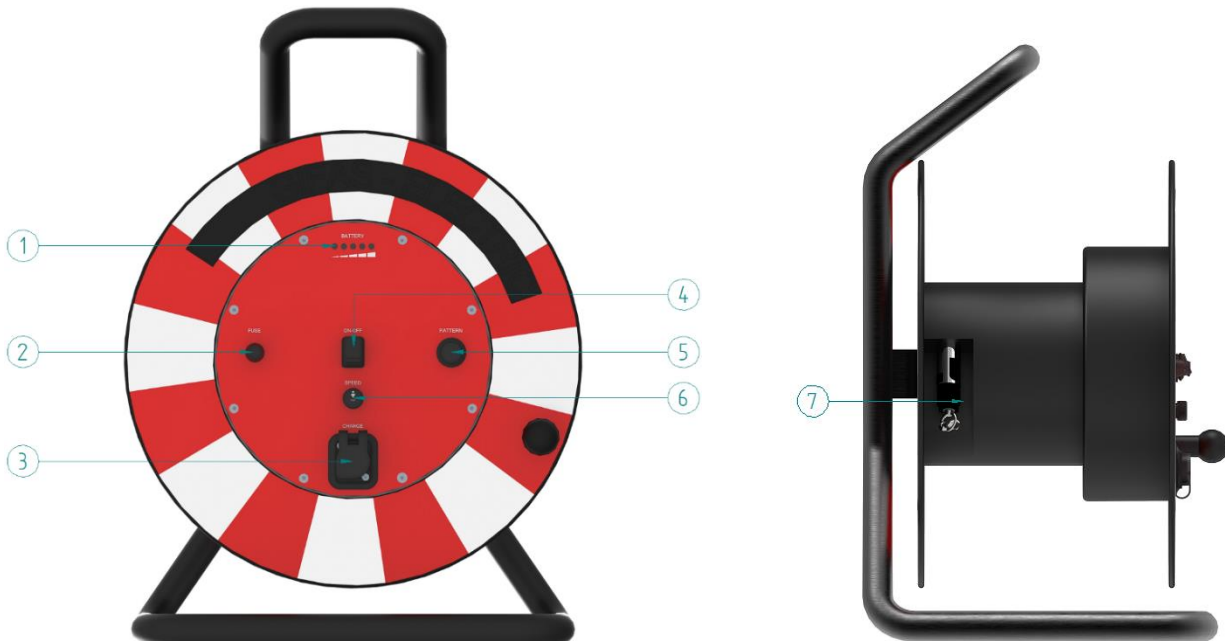
1. **Measuring 25m/24 light modules charging time for full charge**  
approx. 14h
2. **Measuring 100m/96 light modules charging time for full charge**  
approx. 5h
3. **Measuring 100m/96 light modules running light**  
approx. 17h
4. **Measuring 100m/96 light modules lightning slowly**  
approx. 20h
5. **Measuring 100m/96 light modules flashing slowly 1Hz**  
approx. 8h

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## 4 Set up cable reel components

### 4.1 Cable reel components



1. Capacity display with 5 LEDs is used to indicate the battery capacity. 1 LED corresponds to 20% of the battery capacity. The display is started with by pressing the button (5) >2s. The LEDs go out automatically after 5 sec.
  - LED red: battery capacity 0-20%
  - LED orange 1: battery capacity 21-40%
  - LED orange 2: battery capacity 41-60%
  - LED green 1: battery capacity 61-80%
  - LED green 2: battery capacity 81-100%
2. Fuse: Serves as a protective device for the electric power supply in the event of default.
3. Charger/mains connection: The connection is used to charge the integrated battery with 12-24VDC or with 230VAC mains voltage.  
The battery can only be charged when the control unit is switched off!  
The switch must be in the OFF position.  
In addition, an optional power supply Art. No. 860946 can be inserted at the interface for continuous operation of the RoadLED.
4. Main switch On/Off. Used to switch on the RoadLED. The last function is saved and executed when the unit is switched on again. (The switch must be in the OFF position to charge the battery.)

5. Function selection button/Pattern: The button is used to call stored functions. The following functions have been implemented:
1. Continuous lighting
  2. Blinking
  3. Flashing
  4. Running light from cable reel to cable end
  5. Running light from cable end to cable reel
  6. Running light from cable reel to cable end and back

One press of the button corresponds to one function. Pressing the button again starts a new function. The battery capacity is displayed if the button is held down for more than 2 seconds.

6. Rotary controller for setting the speed of the running lights, blinking frequency and flash duration in 10 steps. The following speeds and frequencies are possible:

Blinking: 0.5 – 5Hz

Flashing: flash impuls from 10 – 100ms / Pause 800ms

Running light: 50 -150km/h

7. A terminating plug is used for termination of the bus signal.

#### **i** Hint

The terminating plug must be installed at the last plug and socket connection without fail, in order to guarantee the communication of the LED modules with the cable reel

## 4.2 LED string components

The LED string can be extended to max. 100m and max. 96 LED modules by means of connectors. Different LED strings with either 8 or 24 LED modules can also be connected.

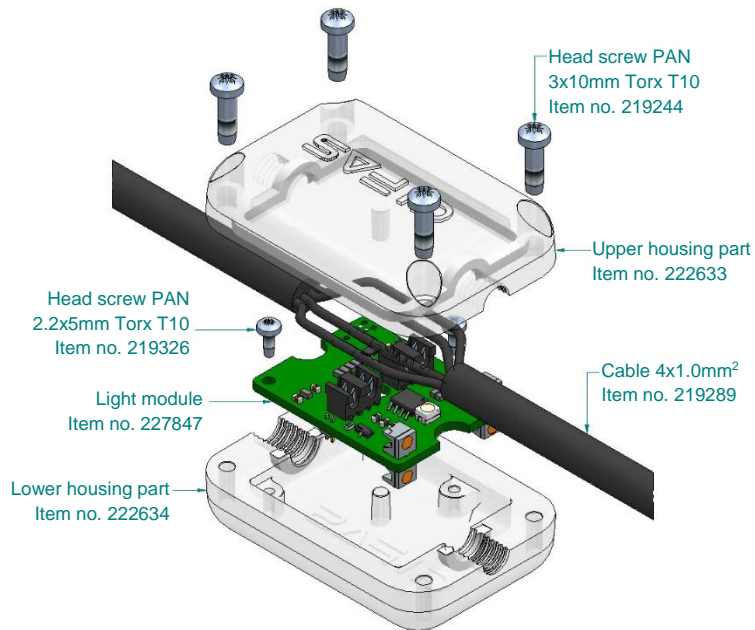
#### **i** Hinweis

The terminating plug must be installed at the last plug and socket connection without fail, in order to guarantee the communication of the LED modules with the cable reel. Communication breakdowns between the LED modules could arise if the terminating connector is not provided. The terminating connector is located on the cable reel socket when delivered.



## 4.3 Light module components

### 4.3.1 Light module 1-15



## 5 Repairation / replacing light module

In principle, the following components can be exchanged by qualified personnel upon request with consideration given to the ESD protection measures:

- Upper housing part with sealing
- Lower housing part with sealing
- Light modules

However, it is advisable to replace the entire light module (item no. 860837).

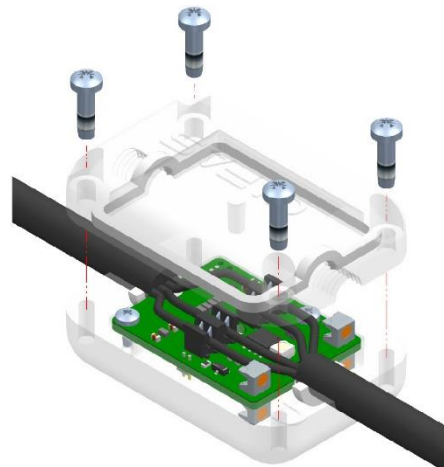
### **i** ESD protection measures

Sensitive electrical or electronic parts, components and devices can be damaged or even destroyed by an electrostatic discharge in the immediate vicinity. An electrostatic discharge can come from people or be caused through handling ESD-sensitive components. Electrically conductive products which conform to DIN EN 61340-5-1: Protection of electronic devices from electrostatic phenomena are essential in electronic environments to prevent an electrostatic discharge.

### 5.1 Repairation light module 1-15

#### 6. Open the housing of the defective module

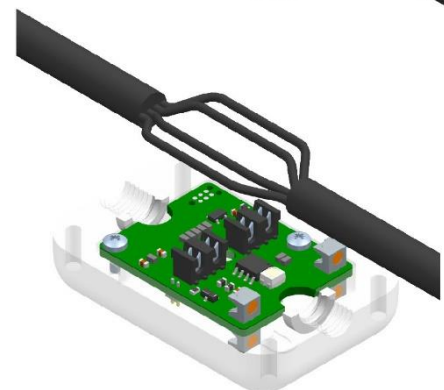
Loosen the 4 housing screws with a Torx T6 screwdriver and remove the upper housing part.



#### 7. Remove the strands from the electronics

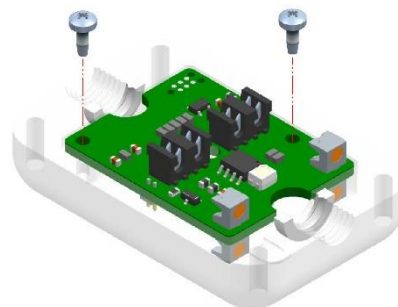
Remove the strands from the self cutting terminals. Use a tool to pull the strands upwards.

Remove the old light module.



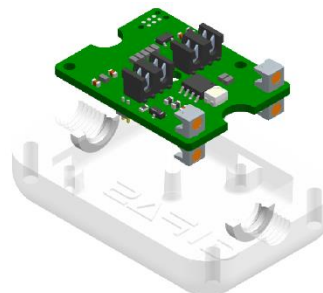
**8. Dismantle the electronics**

Loose the 2 screws with a Torx T6 screwdriver and remove the electronics.



**9. Remove the electronics**

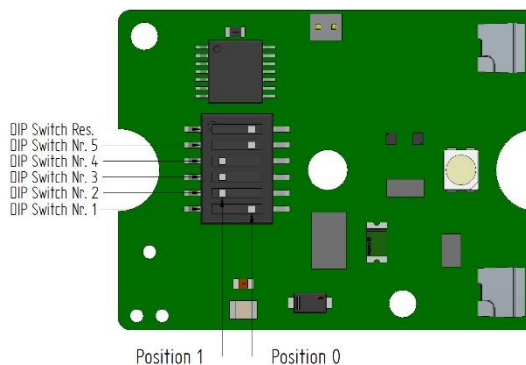
Remove the electronics. Consider the ESD protection measures.



**10. Transfer the DIP switch settings**

Transfer the DIP switch from the old module to the new module

If a switch is moved to the right, the respective address is interpreted as 0. If a switch is moved to the left, the respective address is interpreted as 1.



If a configuration is no longer recognisable, the setting can be taken from the following table

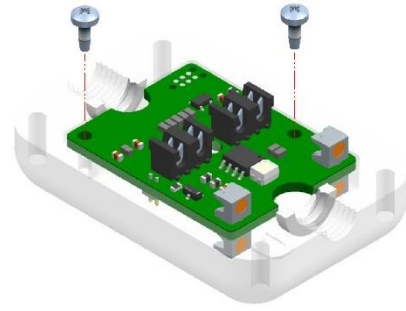
The light module with address 1 is located at the beginning of the cable reel. The light module with address 16 is located at the end of the cable.

Example: The address of the light module should be set to address 15. According to the table in section 6. DIP switch no. 1, 2, 3 and 4 must be in position 1 and DIP switch no. 5 in position 0.

Adresse RoadLED	Position DIP-Switch				
DIP Switch Nr.	5	4	3	2	1
Adresse 1	0	0	0	0	0
Adresse 2	0	0	0	0	1
Adresse 3	0	0	0	1	0
Adresse 4	0	0	0	1	1
Adresse 5	0	0	1	0	0
Adresse 6	0	0	1	0	1
Adresse 7	0	0	1	1	0
Adresse 8	0	0	1	1	1
Adresse 9	0	1	0	0	0
Adresse 10	0	1	0	0	1
Adresse 11	0	1	0	1	0
Adresse 12	0	1	0	1	1
Adresse 13	0	1	1	0	0
Adresse 14	0	1	1	0	1
Adresse 15	0	1	1	1	0
Adresse 16	0	1	1	1	1
Adresse 17	1	0	0	0	0
Adresse 18	1	0	0	0	1
Adresse 19	1	0	0	1	0
Adresse 20	1	0	0	1	1
Adresse 21	1	0	1	0	0
Adresse 22	1	0	1	0	1
Adresse 23	1	0	1	1	0
Adresse 24	1	0	1	1	1

### 11. Mounting the electronics

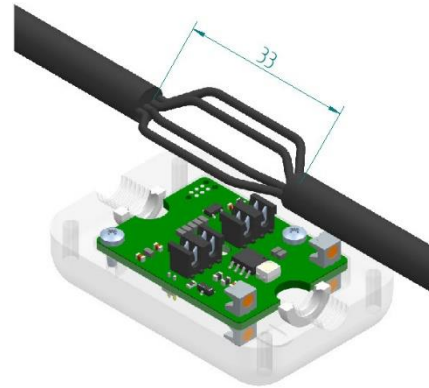
Use a Torx T6 screwdriver to attach the electronics with 2x 2.2x5mm screws. Make sure that the connection terminals are at the top. The max. tightening torque is 0.4Nm



### 12. Mounting the new LED module

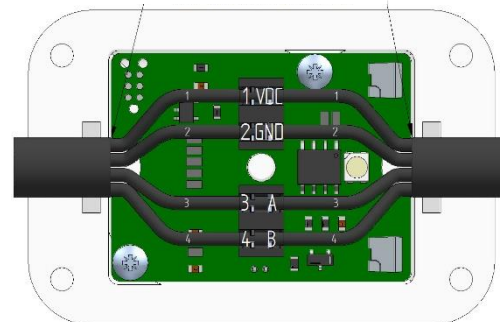
Lay the cable over the module

If necessary, remove 33mm of cable insulation, so that the cable cores are exposed.

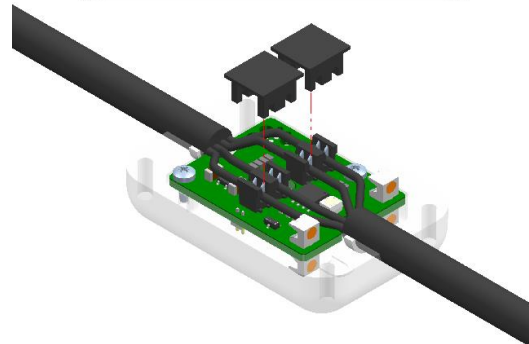


The insulation of the cable cores are labelled No. 1-4. Place the strands in the self cutting terminals as shown in the illustration.

cable sheath flush with inside of housing

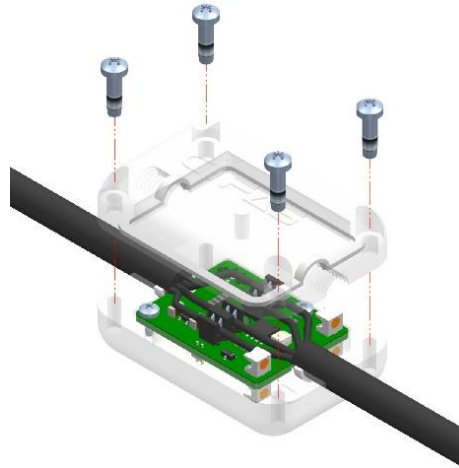


Press the cable cores into the self cutting terminals with the caps. The caps must be removed afterwards.



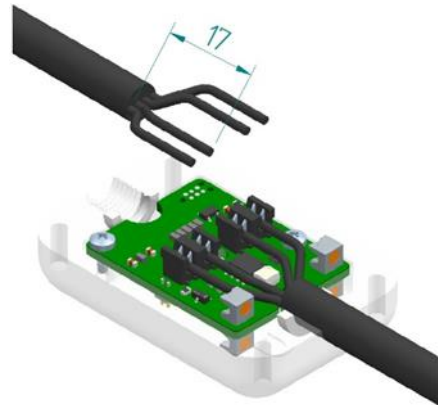
### 13. Mount the upper housing part

Use a Torx T10 screwdriver to mount the upper part of the housing with 4x 3x10mm screws. The max. tightening torque is 1.5Nm.



## 5.2 Repair of a cable section

If a section of a cable is damaged, it can be replaced with a new cable. Remove 17mm of cable insulation.





## 6 Maintenance and debugging

### 6.1 Inspection and maintenance plan

Work to be carried out	Time period/frequency
Function test	In accordance with the country-specific provisions/as required
Cleaning	If required and according to the degree of dirt

### 6.2 Description of the inspection and maintenance plan

All functions of the RoadLED must be maintained and, if need be, executed by professionally trained personnel, in accordance with the regulations, standards and rules of the respective country.

### 6.3 Troubleshooting / Measures for fault elimination

Fault / error message	Possible cause	Remedy
LED modules do not light up	<ul style="list-style-type: none"> <li>- Battery discharged</li> <li>- Fuse defective</li> <li>- Interrupted cable</li> <li>- Light module defective</li> <li>- Control unit defective</li> </ul>	<ul style="list-style-type: none"> <li>- Charge battery</li> <li>- Replace defective fuse</li> <li>- Check cable and replace damaged section if necessary.</li> <li>- Replace the electronics of the light module.</li> <li>- Contact the manufacturer GIFAS or have it checked by a qualified electrician on site.</li> <li>- if required, send in the complete unit.</li> </ul>
LED module flickers	<ul style="list-style-type: none"> <li>- Light module connection may not be tight</li> <li>- Cable break</li> </ul>	<ul style="list-style-type: none"> <li>- Contact the manufacturer GIFAS or have it checked by a qualified electrician on site</li> <li>- If required, send in the light module.</li> </ul>
Battery is not being charged	<ul style="list-style-type: none"> <li>- Charger not correctly connected</li> <li>- Charging cable defective</li> <li>- Plug and socket connections defective</li> <li>- Temperature too high or too low</li> <li>- Battery defective</li> </ul>	<ul style="list-style-type: none"> <li>- Check charging cable for correct connection.</li> <li>- Check charging cable for damage</li> <li>- Change charging environment or select cooler or warmer location</li> <li>- Battery capacity indication defective</li> <li>- Send to GIFAS for repair</li> </ul>
Battery is not being fully charged - Battery life too short	<ul style="list-style-type: none"> <li>- Ageing of the battery and decrease of the max. capacity</li> <li>- Battery not fully charged</li> </ul>	<ul style="list-style-type: none"> <li>- Send to GIFAS for battery change.</li> <li>- Recharge the battery and charge it occasionally using the battery capacity indication monitoring.</li> </ul>
Damage to cable drum		<ul style="list-style-type: none"> <li>- Send to GIFAS for repair</li> </ul>

**Hint**

The RoadLED and its components may only be replaced by the manufacturer or a service technician appointed by the manufacturer or a comparable qualified person.

Subject to technical changes and errors.

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## 7 Service

### 7.1 Service addresses

GIFAS ELECTRIC GmbH Borsigstrasse 9  D-41469 Neuss	GIFAS-ELECTRIC S.r.l Via dei Filaracci 45 Piano del Quercione I-55054 Massarosa (LU)	GIFAS ELECTRIC GmbH Strass 2  A-5301 Eugendorf	GIFAS-ELECTRIC GmbH Dietrichstrasse 2 Postfach 275 CH-9424 Rheineck
☎ +49 2137 105-0 📠 +49 2137 105-230 🌐 www.gifas.de ✉ verkauf@gifas.de	☎ +39 58 497 82 11 📠 +39 58 493 99 24 🌐 www.gifas.it ✉ info@gifas.it	☎ +43 6225 7191-0 📠 +43 6225 7191-561 🌐 www.gifas.at ✉ verkauf@gifas.at	☎ +41 71 886 44 44 📠 +41 71 886 44 49 🌐 www.gifas.ch ✉ info@gifas.ch

### 7.2 Imprint

GIFAS-ELECTRIC GmbH  
CH-9424 Rheineck  
www.gifas.ch

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