LaneLED GFK

HANDRAIL LIGHTING SYSTEM

Product information
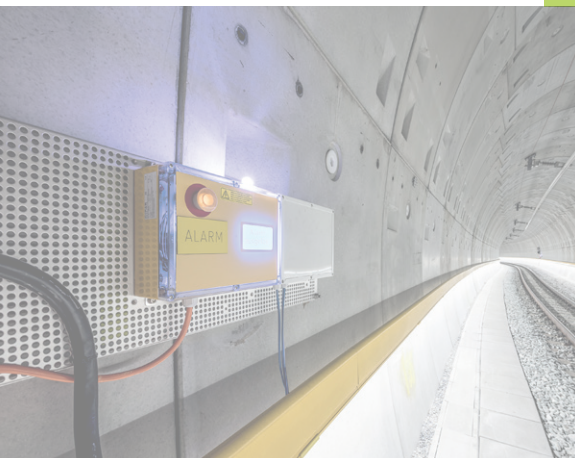
«Handrail Lighting System» for self-rescue in the gallery and duct

Various accidents and fires in railway tunnels have shown that the self-rescue measures for passengers and Staff must be improved.

Protection of life and limb – evacuation – firefighting, and initiating protective measures.

This system was developed in cooperation with well-known manufacturers and has been tested to the specifications of the TSI (Technical Specifications for Interoperability – Directive 2008/57 / EC of 17.6.2008).

For the first time the LaneLED GFK Handrail Lighting System enables operators and engineers to install a complete product, tested as a system, which fulfils all technical requirements from the TSI.

The Handrail Lighting System is the first system where the modular components have been successfully tested in fire tests according to **DIN 4102 part 12**.
This is the first handrail solution in which the modular components have been jointly tested successfully in fire tests according to DIN 4102 Part 12. The numerous elaborate tests were carried out by the «Materialprüfanstalt Dresden» (MPA Dresden), the corresponding certificates can be sent on request.

In the interaction of all clearly defined products, the system test E30 - E90 of the system components is confirmed!

Based on guidelines (eg handbook SBB I-20036 «Self-rescue measures in tunnels» or international specifications of the TSI) we developed the following solutions:

LED illuminated handrail with functional integrity!
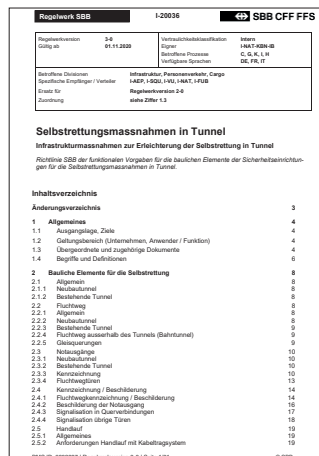
Applications:
- railway tunnels
- gallery lighting
- power plant and cavern corridors
- safety tunnels, access and evacuation tunnels
- mines
- versions with or without functional maintenance

Your advantages:
- certified in accordance to DIN 4102 Part 12
- easy and quick installation
- type-tested components
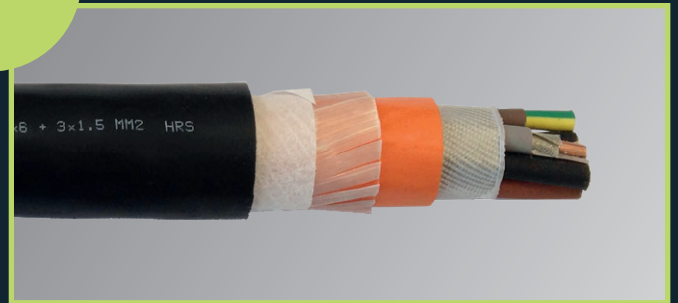- approved by FOT Switzerland (Federal Office of Transport)
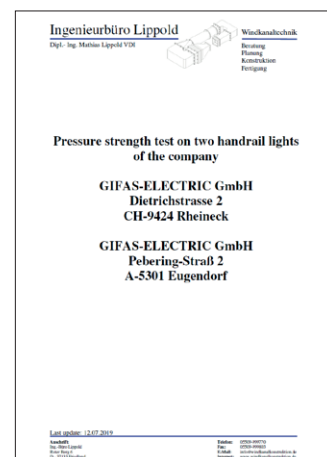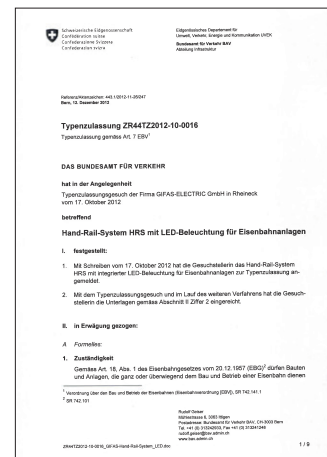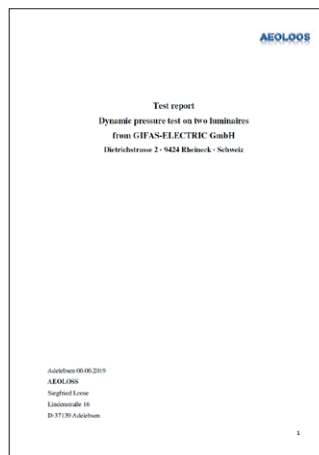
Lighting components

– LaneLED light bar in special profile including electrical supply

Mechanical components

– handrail GFK, fibreglass reinforced plastic
– wall fastening, stainless steel brackets,
– connector and bracket parts

+
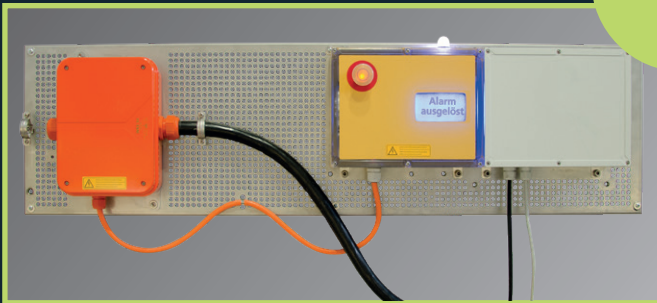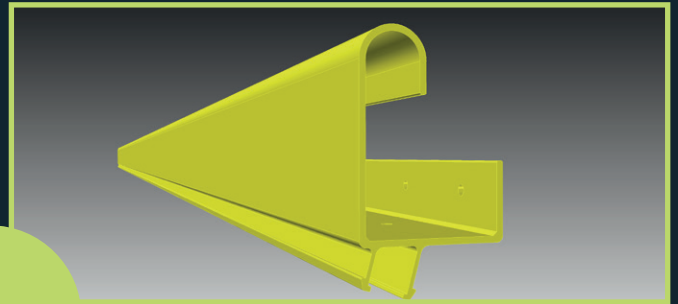
Safety components

– fire-resistant junction box, fully equipped
– optional alarm unit, individually manufactured
– fire-resistant junction box, fully equipped

Connecting components

– main or supply cable; project-based for control and supply
– junction, ending and mounting parts

=

LaneLED GFK

Handrail with integrated emergency escape route lighting

system tested according to DIN 4102 part 12
E30 | E60 | E90

GIFAS ELECTRIC

Detail A

system cable 2×2.5 mm²

aluminium profile

LED plate

sealing compound 2K

lateral cover

Detail A

cable entry piece

current collector

contact part in the current collector

connection cable light bar

aluminium profile
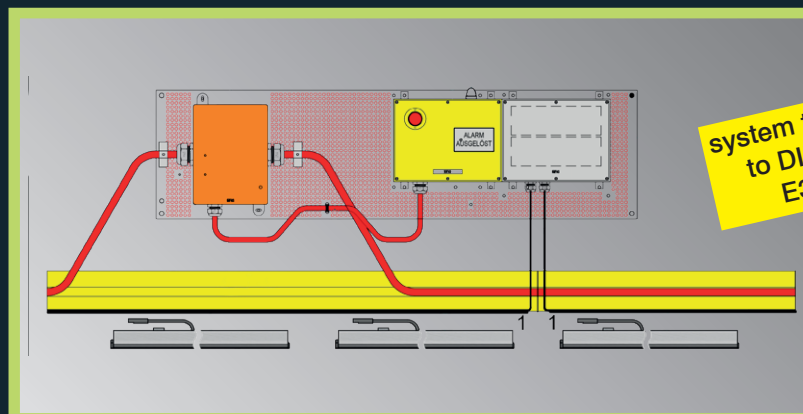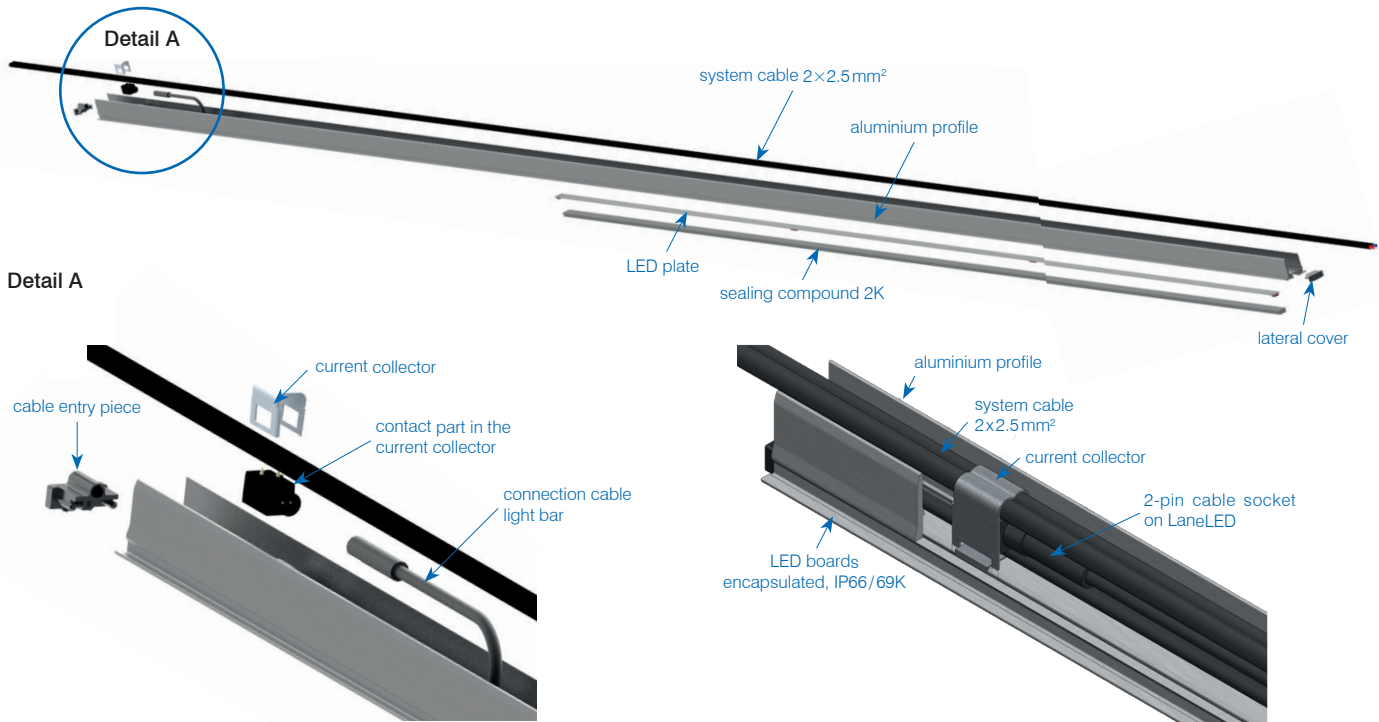
system cable 2×2.5 mm²

current collector

2-pin cable socket on LaneLED

LED boards encapsulated, IP66/69K

LaneLED

The «LaneLED» light bar from GIFAS is the base element of the illuminated Handrail System LaneLED GFK. The appropriate type is selected depending on the requirements of the operator, whereas the desired lighting strength is the most important specification. The other parameters of the LaneLED are carefully defined.

- Light colour: 4'400 K
- Beam angle: 120°
- Operating life: L90/B10 100'000 h +25° C
- Protection category: IP66/69K
- Impact resistance: IK10
- Operating range of temperature: −25° C to +45° C

Composition of the LaneLED

The carrier profile of the «LaneLED» light bar consists of a special aluminium profile with special characteristics for mechanical and chemical strains.

A flexible and separable LED strip is inserted from below and incorporated into the aluminium profile with 2 component casting compound. The encapsulation leads to the high protection class of IP66/69K.

There is room for the system cable and the current collector in the upper part of the profile (in between the flanks).

Light bar LaneLED

LaneLED with special anodised aluminium profile, dimensions approx. 30×26×2'220 mm with LED modules 21-32 VDC, 4'400 K, beam angle 120˚, ready for connection, not including assembly materials (system cable and current collector).

See page 5 for assortment.

Illumination

Light emission of LaneLED GFK handrail
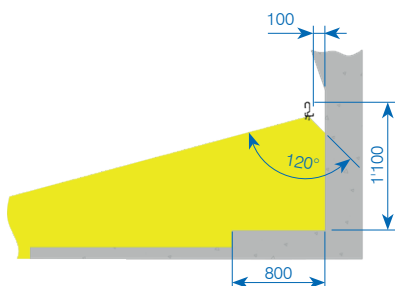
Current collector

Each individual LaneLED is connected to the power supply by the current collector and is freely attachable to the flat cable 2×2.5 mm². The cable bushing serves as the interface to the current collector and the connection cable with plug 2P of the LaneLED (IP66/69K connection).

Type SNAP | Type SCREW
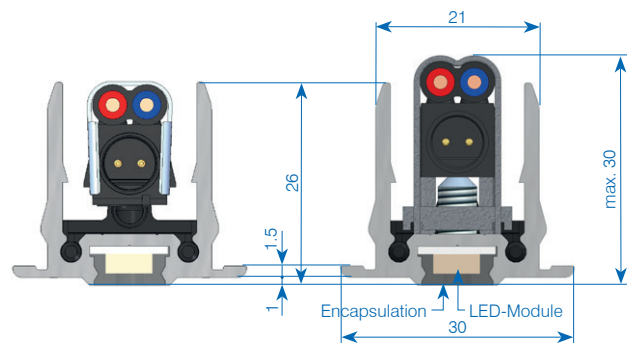
View: Cut of the profile with current collector

Accessories LaneLED

Item no.	Description
209768	LED, system cable black, 2×2.5mm² flat cable CPR B2ca XLPO/XLPO
209769	LED, system cable blue, 2×2.5mm² flat cable CPR B2ca XLPO/XLPO
209770	LED, system cable red, 2×2.5mm² flat cable CPR B2ca XLPO/XLPO
136230	LED, current collector SCREW 2P, 42V-5A, V4A 1.4401, with metal bracket, thread base plate and set screw
860120	LED, current collector SNAP 2P, 42V-5A, V2A 1.4310 (requires special pliers Item no. 860565)

Technical data LaneLED – Light comparison measurements

Perfect light for each application! Below table gives you an overview of the light data of LaneLED type 1 - 5.

– maintenance factor: 1 (value as new)
– light mounting height: 95 cm
– emergency escape route width: 1 m

Redundancy

The redundant LaneLED light bar has two independent lighting circuits, a separate feed-in for every second LED. This ensures that, if one lighting circuit fails (power supply failure, wire breakage, electronics defect, etc.) the LaneLED light bar retains 50 % of its functionality.

Standard assortment

Item no.	Length mm	Number of LED	Output W	Power mA	Luminous flux lm
Type 1: LaneLED GFK, 4'400 K, 21 - 32 VDC, 12 Lux - 95 cm					
860370	372	12	0.12	5	8
860371	1110	36	0.36	15	24
860484	1479	48	0.48	20	32
860485	1848	60	0.60	25	40
860372	2220	72	0.75	30	48
Type 3: LaneLED GFK, 4'400 K, 21 - 32 VDC, 50 Lux - 95 cm					
860373	372	12	0.5	20	32
860374	1110	36	1.5	60	96
860486	1479	48	2.0	80	128
860487	1848	60	2.5	100	160
860375	2220	72	3.0	120	192
Type 4: LaneLED GFK, 4'400 K, 21 - 32 VDC, 100 Lux - 95 cm					
860488	372	12	1.0	40	64
860489	1110	36	3.0	120	192
860490	1479	48	4.0	160	256
860491	1848	60	5.0	200	320
860492	2220	72	6.0	240	384
Type 5: LaneLED GFK, 4'400 K, 21 - 32 VDC, 150 Lux - 95 cm					
860376	372	12	1.5	60	96
860377	1110	36	4.5	180	288
860493	1479	48	6.0	240	384
860494	1848	60	7.5	300	480
860378	2220	72	9.0	360	576

Other versions on request

Assortment Redundant

Item no.	Length mm	Number of LED	Output W	Power mA	Luminous flux lm
Type 2: LaneLED GFK redundant, 4'400 K, 21 - 32 VDC, 24 Lux - 95 cm					
860379	374	12	2×0.12	2× 5	2× 8
860380	1112	36	2×0.36	2×15	2×24
860500	1481	48	2×0.50	2×20	2×32
860501	1850	60	2×0.60	2×25	2×40
860381	2222	72	2×0.75	2×30	2×48
Type 3: LaneLED GFK redundant, 4'400 K, 21 - 32 VDC, 50 Lux - 95 cm					
860382	374	12	2×0.25	2×10	2×16
860383	1112	36	2×0.75	2×30	2×48
860502	1481	48	2×1.00	2×40	2×64
860503	1850	60	2×1.25	2×50	2×80
860384	2222	72	2×1.50	2×60	2×96
Type 4: LaneLED GFK redundant, 4'400 K, 21 - 32 VDC, 100 Lux - 95 cm					
860385	374	12	2×0.50	2× 20	2× 32
860504	1112	36	2×1.50	2× 60	2× 96
860461	1481	48	2×2.00	2× 80	2×128
860505	1850	60	2×2.50	2×100	2×160
860506	2222	72	2×3.00	2×120	2×192
Type 5: LaneLED GFK redundant, 4'400 K, 21 - 32 VDC, 150 Lux - 95 cm					
860472	374	12	2×0.75	2× 30	2× 48
860386	1112	36	2×2.20	2× 90	2×144
860507	1481	48	2×3.00	2×120	2×192
860508	1850	60	2×3.80	2×150	2×240
860387	2222	72	2×4.50	2×180	2×288

Other versions on request

Type 1, E_m = 7.6 lx

[m] 10 20 30 40 50

Type 2, E_m = 15.5 lx

[m] 10 20 30 40 50

Type 3, E_m = 31.1 lx

[m] 10 20 30 40 50

Type 4, E_m = 63 lx

[m] 10 20 30 40 50

Type 5, E_m = 94 lx

[m] 10 20 30 40 50

Type 1   Type 2   Type 3   Type 4   Type 5   Type 6

5   10   20   40   80   120   180

Luminance (lx)

length

1500*

System cable

Light bar

Safety bar
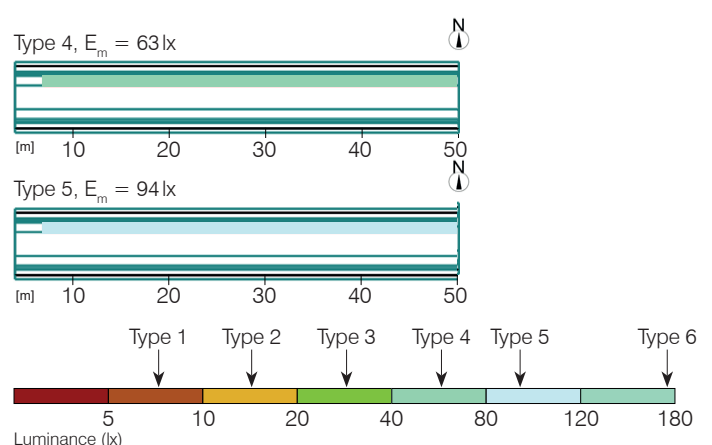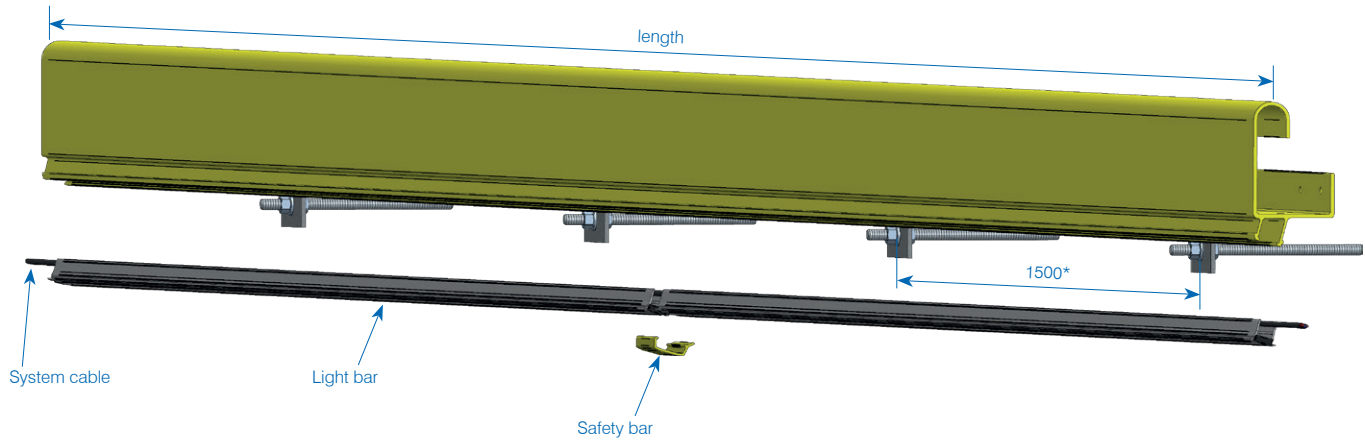
Handrail GFK

The «MC 50 handrail», made from glass fibre reinforced plastic, is the carrier element of the illuminated Handrail Lighting system LaneLED GFK.
The MC50 profile was selected so that it can serve as handrail, as carrier element for the LED bars as well as provide integrated cable tray. The handrail has been a proven product in railway tunnels for many years.
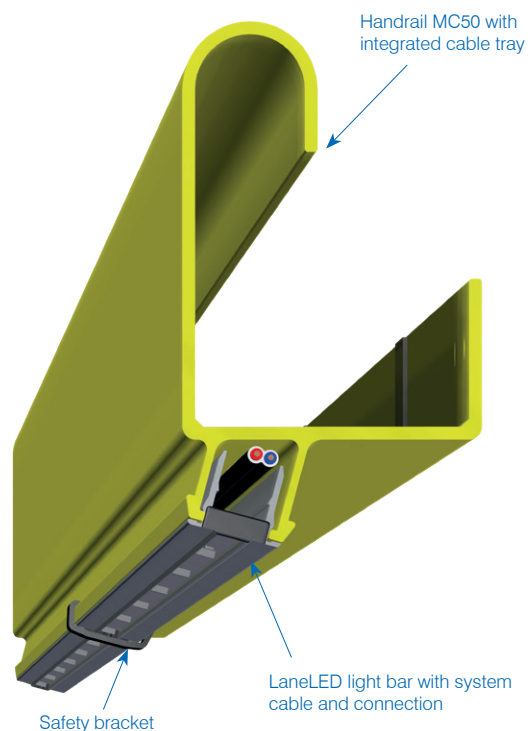
– handrail material in yellow signal colour
– perfect accessories for a quick and easy assembly
– many specific special items for special solutions
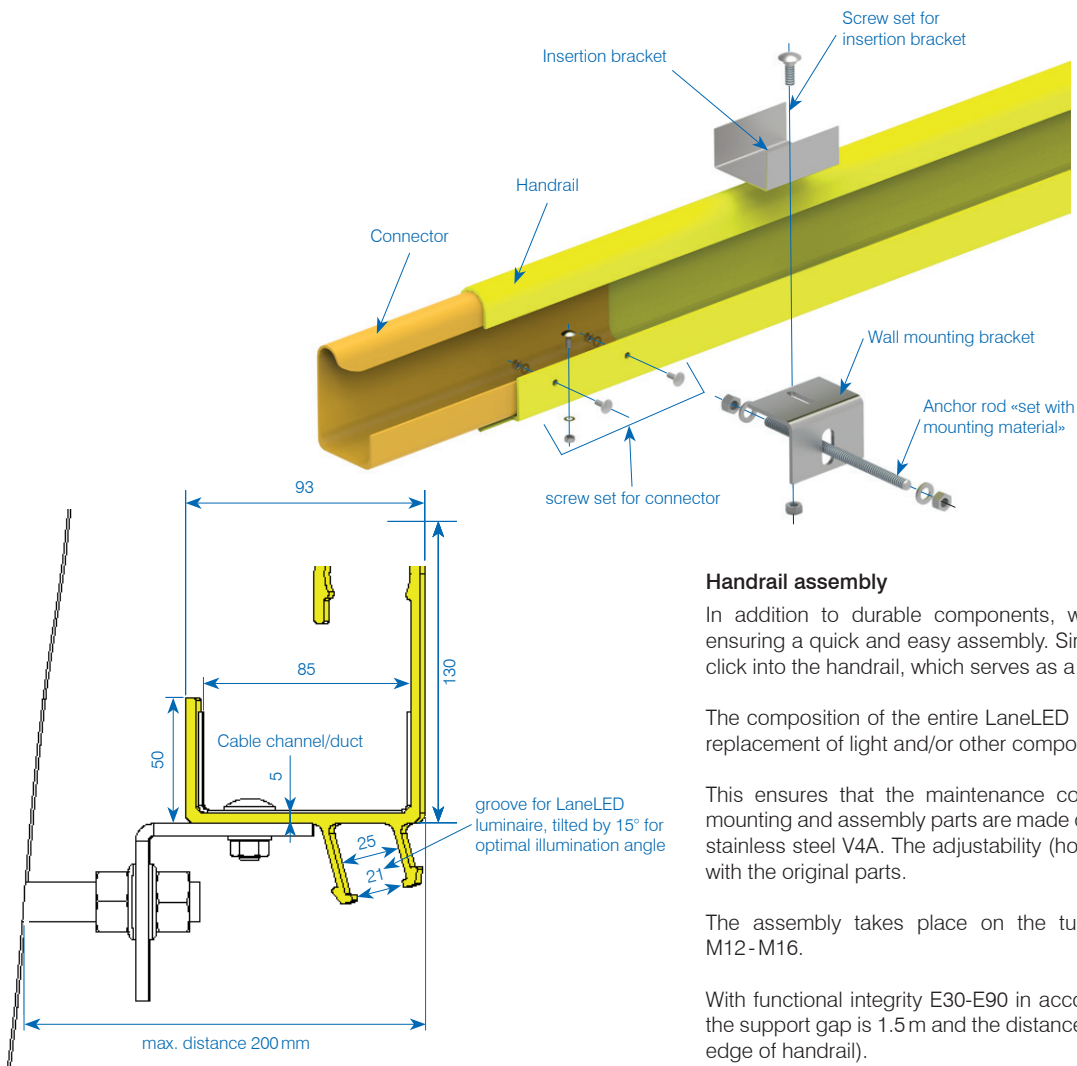
Handrail composition

The handrail profile is the core element of the composition. The LaneLED light bar (which is connected to the system cable) is clicked into the «LED groove» from below. A safety bracket is used inbetween 2 LaneLED light bars to fix.

Handrail for self-rescue

– handrail 130×93 mm made from glass fibre reinforced plastic (GRP)
– halogen-free, standard length = 6'000 mm, colour RAL 1023
– multifunctional with integrated cable tray as well as LED-groove for quick mounting (click-in) of the LaneLED luminaires
– impact resistant, hardly flammable, self-extinguishing, halogen-free
– assembly with threaded bolt, support gap 1.5 m (or according to manufacturer's specification)

Handrail MC50 with integrated cable tray

LaneLED light bar with system cable and connection

Safety bracket

Screw set for
insertion bracket

Insertion bracket

Handrail

Connector

Wall mounting bracket

Anchor rod «set with
mounting material»

screw set for connector

93

85

130

50

5

Cable channel/duct

groove for LaneLED
luminaire, tilted by 15° for
optimal illumination angle

25

21

max. distance 200 mm

Handrail assembly

In addition to durable components, we paid particular attention to ensuring a quick and easy assembly. Simply allow the LED light bars to click into the handrail, which serves as a cable duct at the same time.

The composition of the entire LaneLED GFK is designed for a possible replacement of light and/or other components.

This ensures that the maintenance costs can be kept very low. All mounting and assembly parts are made of dimensionally stable material, stainless steel V4A. The adjustability (horizontal and vertical) is ensured with the original parts.

The assembly takes place on the tunnel wall with threaded bolts M12-M16.

With functional integrity E30-E90 in accordance with DIN 4102 part 12, the support gap is 1.5 m and the distance to the wall 200 mm max. (outer edge of handrail).

Assortment LaneLED GFK

Item no.	Description
140336	Handrail type MC50LED, L=6000mm 130×93×6000 mm, GFK yellow Ral 1023, connector incl.
178634	Handrail type MC50LED, L=2500mm 130×93×2500 mm, GFK yellow Ral 1023
117164	Safety bracket, L= 90 mm GFK yellow Ral 1023
138874	Safety bracket, L= 90 mm, with hole Ø18mm GFK yellow Ral 1023
140338	Connector, L=400mm GFK yellow Ral 1023, without screw set
149653	Screw set connector, M6, 6 pieces (VE100)
140328	Insertion bracket V4A, 100×84/45×1.5mm
140331	Screw set insertion bracket M8, 1 pieces (VE100)
140330	Wall mounting bracket V4A, 100×70×5mm
174464	Cover plastic, L=3000mm, grey / for handrail MC50LED
174465	Lid spring V4A, for cover MC50LED
178975	Anchor rod V4A, M16×150mm, including incidentals
178977	Anchor rod V4A, M16×200mm, including incidentals
177407	Anchor rod V4A, M16×300mm, including incidentals
177409	Injection mortar 500ml to anchor rods for: 30 pieces M16 / 40 pieces M12

Insertion bracket

Cover GFK

Wall mounting bracket

Screw set
Insertion bracket

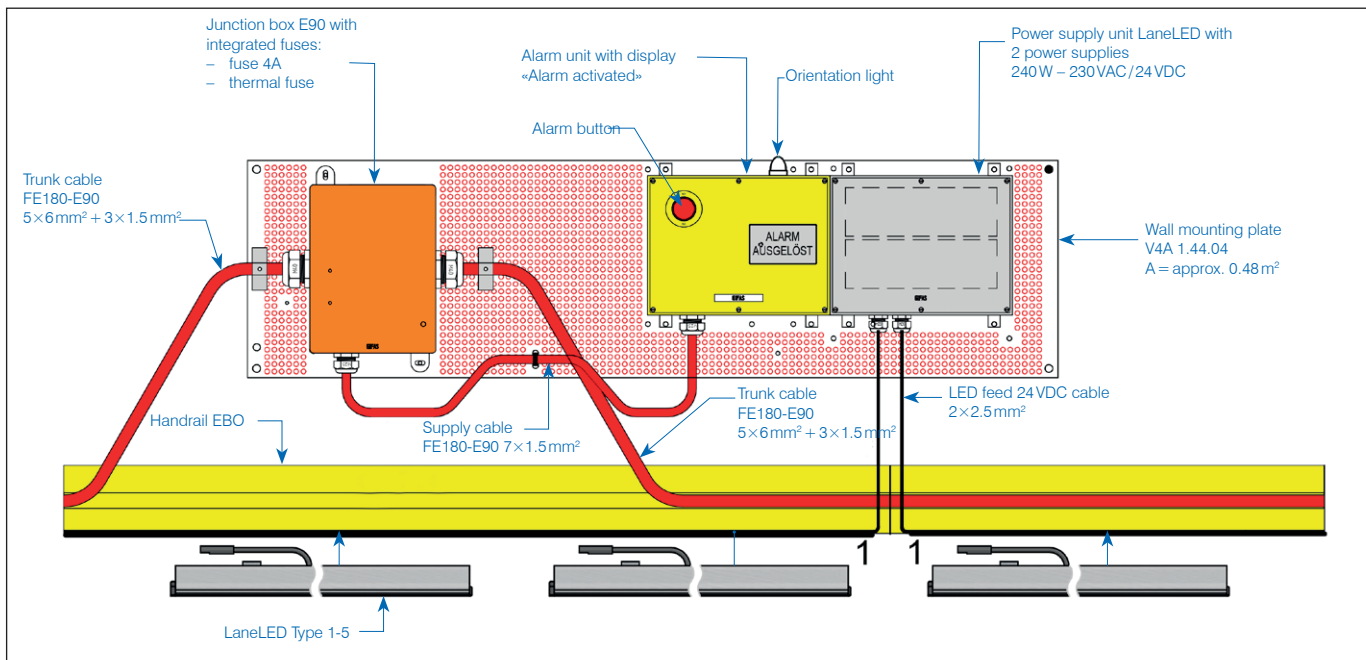Anchor rod M16/
Injection mortar
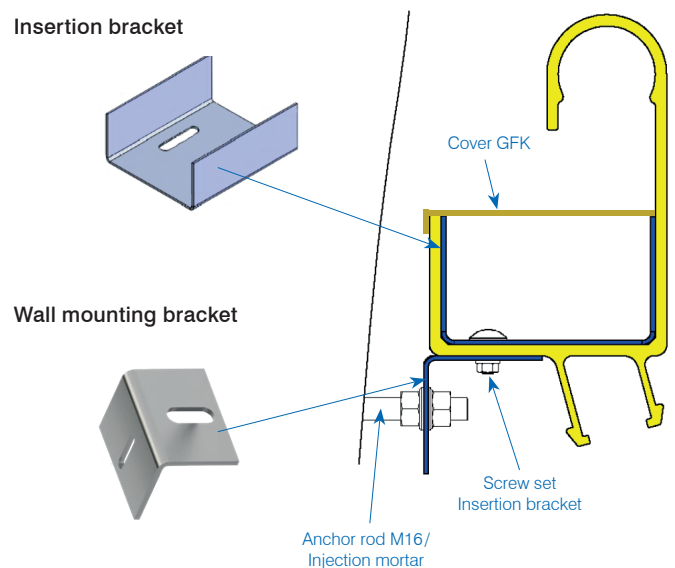
Feeding unit

The orientation light in the handrail is supplied by the feeding unit. At the same time, it ensures connection to the power supply and also fulfils the relevant regulations for fire-resistant design. In order to make assembly easier, the feeding unit is mostly pre-assembled on a mounting plate at the factory.
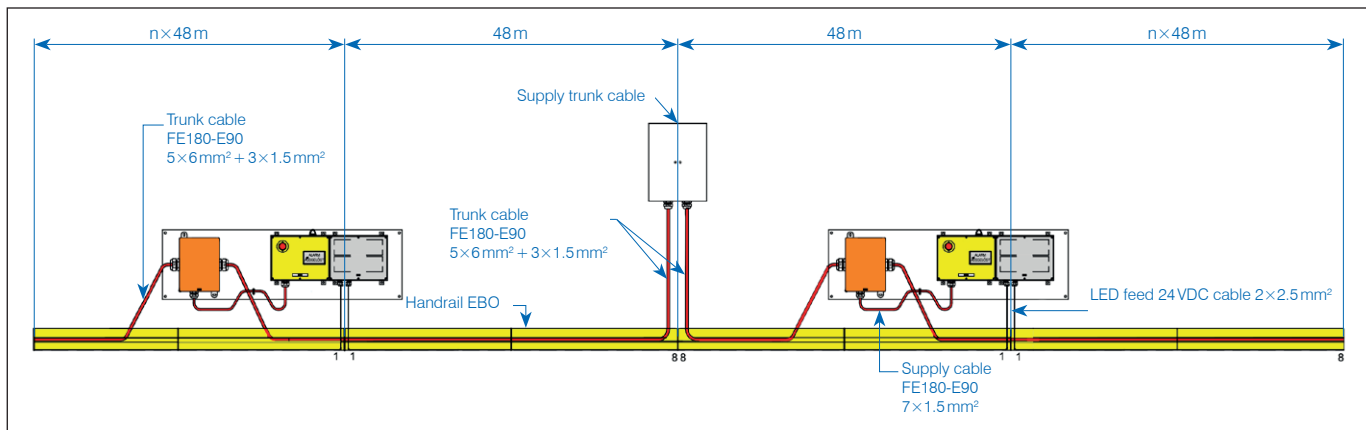
A feeding unit consists of a maximum of 3 elements:
– Junction box E30/E90
– Control-/alarm unit
– Power supply cabinet

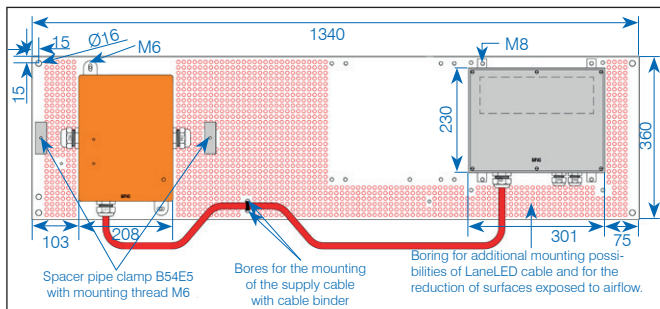**Example: (In accordance with SBB Swiss Railways directive 1-20036)**

Feeding unit design, alarm button at the front (Item no. 130352)

Junction box E90 with integrated fuses:
– fuse 4A
– thermal fuse

Alarm unit with display «Alarm activated»

Orientation light

Power supply unit LaneLED with 2 power supplies 240 W – 230 VAC / 24 VDC

Alarm button

Trunk cable FE180-E90 5×6 mm² + 3×1.5 mm²

ALARM AUSGELÖST

Wall mounting plate V4A 1.44.04 A = approx. 0.48 m²

Handrail EBO

Supply cable FE180-E90 7×1.5 mm²

Trunk cable FE180-E90 5×6 mm² + 3×1.5 mm²

LED feed 24 VDC cable 2×2.5 mm²

LaneLED Type 1-5

Feed concept of the supply section (length of lines are project specific)

n×48 m

48 m

48 m

n×48 m

Trunk cable FE180-E90 5×6 mm² + 3×1.5 mm²

Supply trunk cable

Trunk cable FE180-E90 5×6 mm² + 3×1.5 mm²

Handrail EBO

LED feed 24 VDC cable 2×2.5 mm²

Supply cable FE180-E90 7×1.5 mm²

Feeding unit without alarm unit (Item no. 134388)

Spacer pipe clamp B54E5 with mounting thread M6

Bores for the mounting of the supply cable with cable binder

Boring for additional mounting possibilities of LaneLED cable and for the reduction of surfaces exposed to airflow.

Example feeding units

Item no.	Description
130352	LaneLED, feeding unit E30/E90 complete to plate V4A BFA, alarm (ME+A at the front), power supply unit 2×240 W
134388	LaneLED, feeding unit E30/E90 complete to plate V4A BFA, power supply unit 240 W
177406	LaneLED, anchor rod V4A, M12×200 mm, including incidentals
177409	LaneLED, injection mortar 500 ml to anchor rods for: 30 pieces. M16/ 40 piedes. M12

Other versions on request
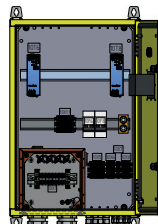
Examples for power supply cabinet
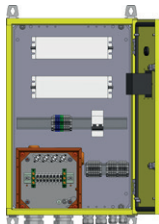
Item no. 188456
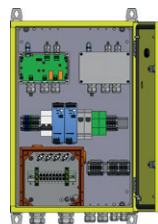

Item no. 192834
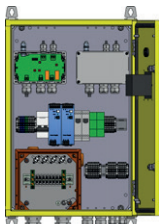
Item no. 193933

Item no. 213219

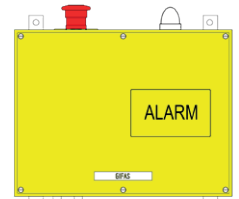| Item no.	Description
188456	LaneLED, power supply cabinet, 1.4301 (V2A) RAL 1023 (yellow signal colour), 400×645×260.8 mm 2 power supplies 230VAC/24VDC-20 W, IP66
192834*	LaneLED, power supply cabinet, 1.4301 (V2A) RAL 1023 (yellow signal colour), 400×645×261 mm 2 power supplies 230VAC/24VDC-240 W, IP66
193933*	LaneLED, power supply cabinet, 1.4301 (V2A) RAL 1023 (yellow signal colour), 400×645×261 mm 2 power supplies 230VAC/24VDC-240 W, IP66
213219**	LaneLED, power supply cabinet, 1.4301 (V2A) RAL 1023 (yellow signal colour), 400×645×260.8 mm 2 power supplies 230VAC/24VDC-240 W, IP66

Other versions on request

* plus failure monitoring when switched off (cold conductor monitoring), failure monitoring during operation (current monitoring relay) and power supply feedback via DC-OK contact

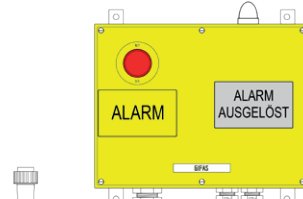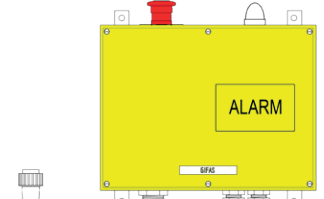*** power supply feedback via DC-OK contact*
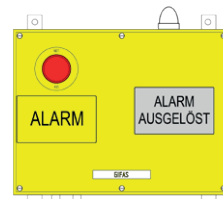
Item no. 136104

Item no. 136136

Spare units for SRM* SBB AG

Item no. 155622

Item no. 155624

*SRM = self-rescue measure

Standard item control-/alarm unit

Art.-Nr.	Description
136104	LaneLED, alarm unit, plastic, 300×230×110mm, with alarm button at the front, with display at the front, IP66
136136	LaneLED, alarm unit, plastic, 300×230×110mm, with alarm button above, without display, IP66
155622	LaneLED, alarm unit, plastic, 300×230×110mm, with alarm button at the front, with display at the front, IP66, with connection cable
155624	LaneLED, alarm unit, plastic, 300×230×110mm, with alarm button above, without display, IP66, with connection cable

Other versions on request
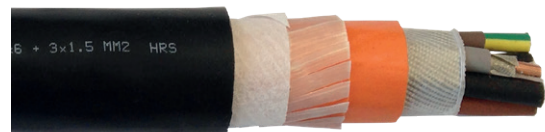
Cable

The trunk or feeder cables are choosen project specific: With/without callback, fireproof cabling to FE1800/E90 or FE05 finish. We are happy to support you!

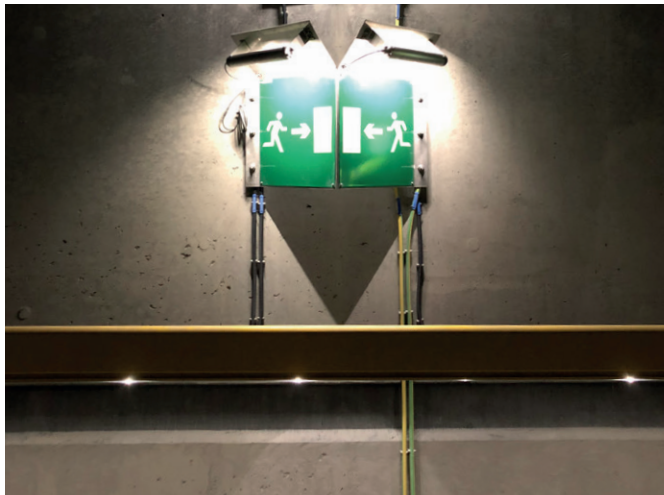| Item no.	Description
141138	LaneLED, high voltage cables FE180/E90 Hybrid, black, 5×6 mm² (LNPE) +3×1.5 mm² (1-3), Ø29.4 mm
178362	LaneLED, supply cable FE180/E90, orange, 5×6 mm² (LNPE), Ø20.1 mm
115421	LaneLED, supply cable FE180/E30, orange, 5×6 mm² (LNPE), Ø14.2 mm
037552	LaneLED, control cables FE180/E30, orange, 3×2.5 mm² (LNPE), Ø9.9 mm
132930	LaneLED, control cables FE180/E30 orange, 7×1.5 mm² (Num.+PE), Ø11.5 mm

Other versions on request

Our services

– planning and concept development as per specifications
– creation of object-specific plans and documents
– relux lighting calculation
– consultation and support through our project managers
– mutual support among the partner companies, contact mediation
– assembly support on site

Assembly

– Ask for our detailed assembly instructions!

Item no. 179280

Item no. 138524

Item no. 176955

Item no. 860565

Item no. 138291

Item no. 137634

Item no. 138174

Assembly equipment for rent

Item no.	Description
138174	LaneLED, assembling jig for feeding unit
138291	LaneLED, mounting aid V2A GFK with 2 reels
138524	LaneLED cable reel trolley for cable reels with max. dim. Ø 500×500
176955	Wall scanner for detecting iron
137634	LaneLED GFK mounting aid, aluminium, 270×50×40 mm
860565	Crimping tool mechanical for current collector / system cable
179280	Battery pack 24 V, 7.2 Ah

Other versions on request

Overall view of SBB-cross city link Zurich

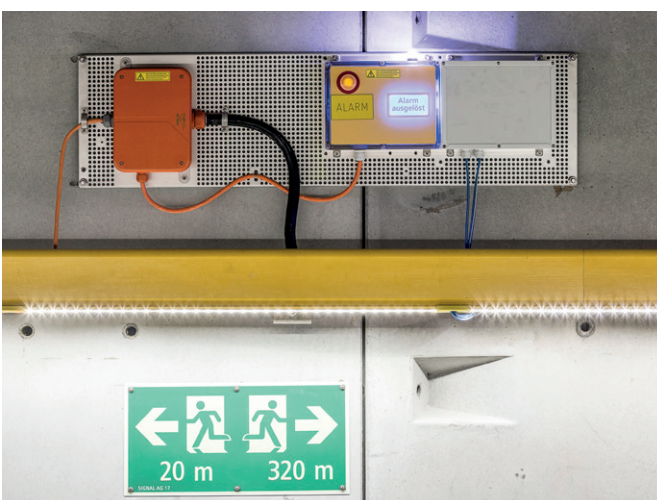*Glatscheras-Tunnel RhB*   *Image: Nadja Simmen/Die Südostschweiz*

Installation tunnel Ruckhalde Appenzeller Bahnen

Direction display for emergency escape route

Alarm unit

Alarm unit

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