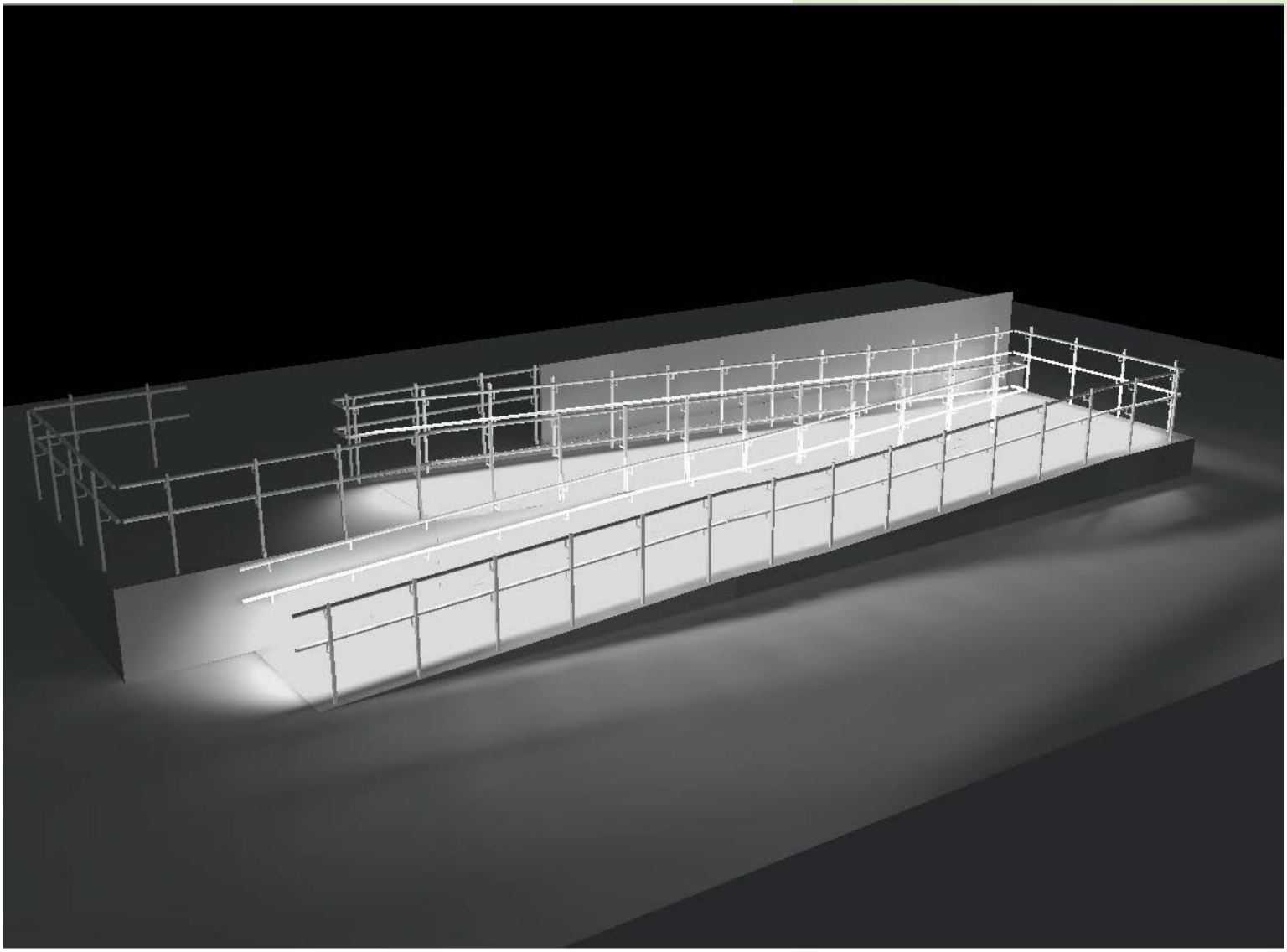
Handrail Lighting

Acrospire Products Ltd



Individual lighting products that provide the precise amount of light, precisely where it is needed.

Acrospire
Products Ltd

We are specialists in the design and manufacture of high performance handrail lighting products

Our unique designs have been engineered to provide unparalleled flexibility in beam spread and projector orientation. Our objective is to maximise illumination performance and energy efficiency,providing the precise amount of light precisely where it is needed

Our technical support is on-hand to make your project work and to achieve this we offer a total design package, including photometric files and cad simulation during planning. On-line, phone and site support during installation. For for the total package we have installation partners that will deliver and install the complete handrail solution.

From our products choose from the economic and versatile Raillight ECO to the ultimate Raillight 2D Asymmetric offering the design versatility of a conventional spotlight.

Raillight ECO

A versatile, compact projector that will fit almost any handrail including retro-fit projects with our Drill and Tap jig

Raillight Asymmetric

A discreet projector installed in the underside of the handrail.
Projects light across the target surface.
Elevation from 0 - 45 degrees

Railight 2D Asymmetric

Projection position is calculated in two planes, projecting light across and along the target surface.
Elevation from 0-60 degrees
Rotation 0-360 degrees

Jigs and Tooling

Products to make installation easier, for new and retro-fit installations

telephone: +44 (0)1256 308467
email: info@acrospireproducts.com
web:www.acrospireproducts.com

Acrospire
Products Ltd

The PRO S projection system
The heart of our handrail lighting products

All of our products feature our close coupled projection system; the combination of a Osram SSL LED chip with a choice of high efficiency focusing lenses and our unique heat transfer system.

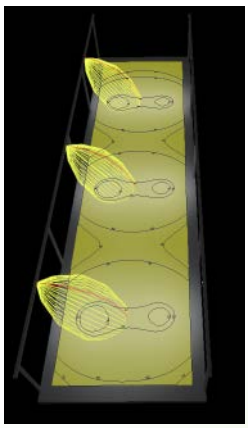
Performance and economy

We tailor our products to provide the maximum performance in luminosity and efficiency for each individual project. Every Raillight is supplied with the optimum lens type to provide the correct intensity and uniformity, enabling the maximum product spacing reducing component and installation costs.
Lenses are available with a choice of beam spreads from 14 to 94 degrees, please contact us for our photometric design service or data files.

Heat transfer

The light emitting diodes life and output are dependent on the LED chip functioning at the correct temperature. PRO S operates at the low running current of 350ma, this ensures the LED chip is not overstressed and will provide the best performance over its maximum working life of around 100,000hours (500ma operation is also possible with a typical life of around 50,000 hours).
PRO S achieves high performance whilst only consuming 1 watt of power (350ma operation). Current LED chips provide 50% efficiency at best, meaning that for every watt consumed half of that is transformed into heat. Our high efficiency PRO S heat transfer system dissipates that heat into the dense mass of the machined metal body, this is in turn is cooled by surface radiation into the surrounding atmosphere. Raillight ECO's screw in body goes one step further and uses the entire metal handrail as an ultra efficient heat-sink.

Tuning Performance

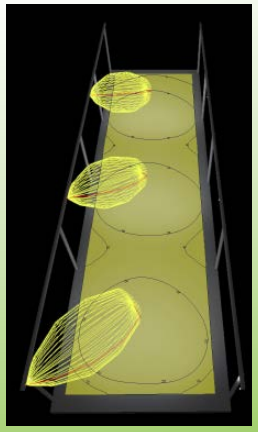


Raillight ECO

Raillight ECO is a simple projector which is screwed into a pre-threaded hole in the hand-rail. It is cost effective and easy to fit. Because of its method of fixing the beam is directed parallel to the body, in order to achieve maximum throw across a surface, the handrail is fixed in a rotated position at installation (or drilled and tapped at the optimum angle with our Jig). The amount of rotation is dependent on the area the illumination has to cover and the intensity and uniformity required .

Raillight Asymmetric

If you wish the lighting to be more discreet we have Raillight Asymmetric. This is mounted into the underside of the handrail and projects light asymmetrically across the target sur-face. This is achieved by machining the body to site the projector at an elevated angle of up to 45 degrees.



Raillight 2D Asymmetric

Raillight 2D Asymmetric offers the ultimate in performance and efficiency. Each Raillight 2D body is machined in 2 axis to provide projection across and along the target surface. The vertical and horizontal co-ordinates are calculated by computer simulation of the installation and machined into the solid metal body The result is just the right amount of light, exactly where it is needed; reducing product quantities, installation time and energy.

Custom design

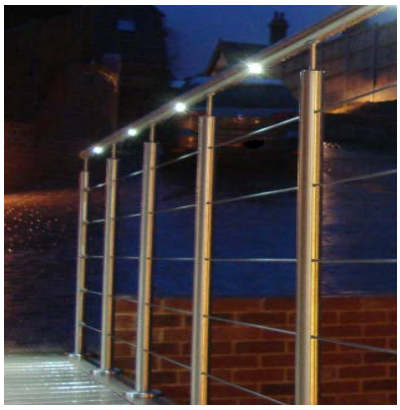
If you need something different, our custom design and engineering service will provide bespoke products quickly and cost effectively

Raillight ECO

The cost-effective and easy way to install handrail lighting. For new and retro-fit applications

A compact, high-performance fixture that offers the widest choice of lens options.

Raillight ECO can be configured with any of the PRO S lens options, offering beam spreads from 14-94 degrees. Choosing the right lens ensures compliance in both intensity and distribution, whilst consequently reducing the number of fixtures required for each project.
Install with the optimum lens at spacings to suit the desired light levels and uniformity. The results are dramatically reduced hot spots, less fixtures and minimum energy consumption and running costs.

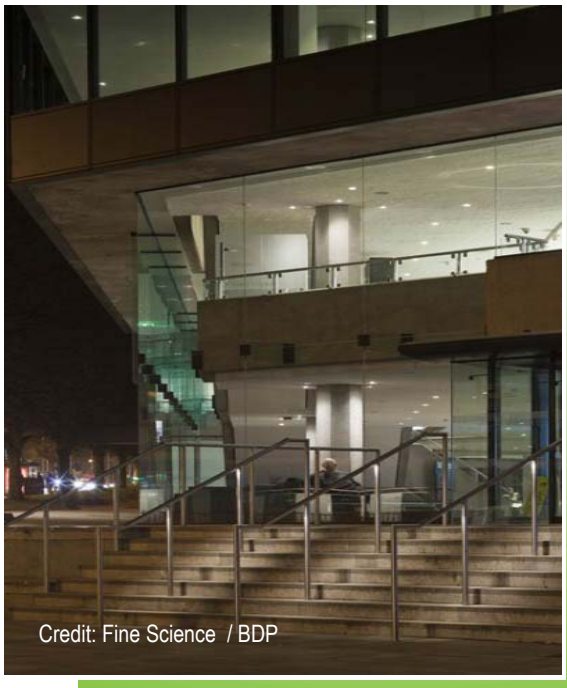


A typical installation will consume between 1.5 – 2 watts per metre / per handrail

Raillight ECO is simply screwed into a pre-tapped hole within the handrail. This ensures a positive mechanical fit and as a result an impressive resistance to vandal attack.

Raillight ECO is waterproof to IP 67 and machined in 316 Stainless Steel to provide excellent corrosion resistance.

We supply Raillight ECO in alternative materials upon request.



Credit: Fine Science / BDP

Raillight Asymmetric

A high-performance asymmetric projector for mounting into the underside of metal handrails.

Designed to throw light asymmetrically across a surface. Available with up to 45-degree elevation.

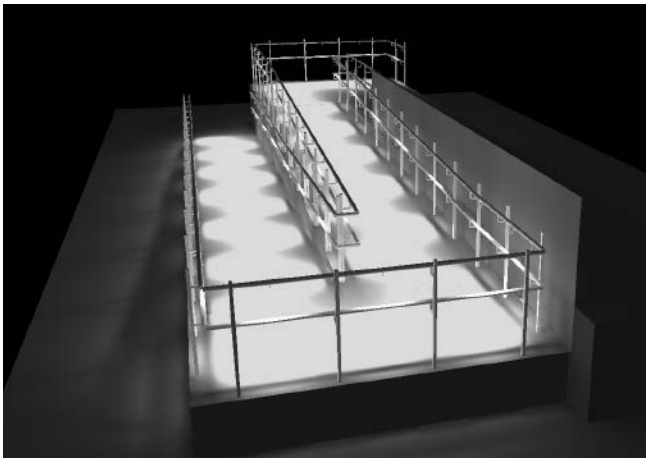
Raillight Asymmetric emits light from the underside of the handrail producing an even illumination across walkways, stairs etc. Its narrow aperture and recessed LED greatly reduces glare,

Raillight Asymmetric is very water resistant, capable of temporary immersion up to
1 metre. The body is designed to resist high impact loads.

New push fit
tamper proof fixing

Manufactured in 316 Stainless Steel to provide excellent corrosion resistance. To suit your handrail material we also provide Raillight Asymmetric in aluminium, brass, copper, bronze and plated mild steel, please let us know your requirements.

Suitable for handrails larger than 40mm diameter, we provide Raillight Asymmetric profiled to suit the handrail radius.



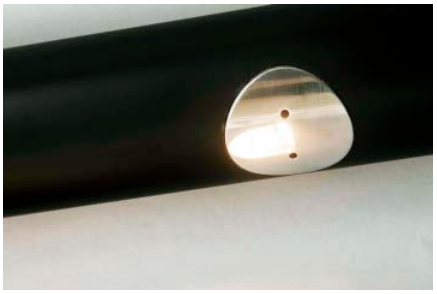
Raillight 2D Asymmetric

The ultimate performer in handrail illumination

Railligh 2D features 2-dimensional projector positioning to provide the ultimate in projection versatility.

The PRO S projector is positioned within the body to project light axially and longitudinally onto the target surface, producing the required amount of light precisely where it is needed. Its position is calculated by software modeling of the project, the optimised co-ordinates are then machined into Raillight 2D's solid metal body.

Raillight 2D extracts the maximum efficiency for every project. This sophisticated design approach results in a increase in the distance between installation points, which in turn means greater energy efficiency and cost reductions in product and installation time.

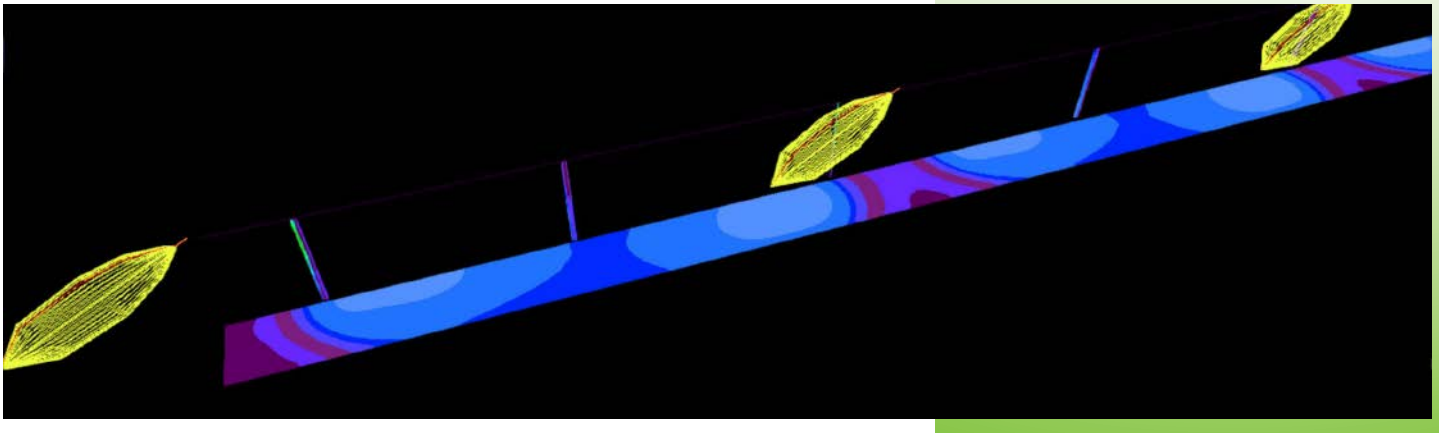


Raillight 2D has all of the features of Raillight Asymmetric such as IP 67 ingress protection and a choice of materials to suit your handrail (316 Stainless Steel is the standard finish) Lens options are 14-36 degrees.

Raillight 2D's solid metal body is vandal resistant and fixed securely with our new push fit installation / extraction tool

Raillight 2D requires a minimum of a 35mm machined hole, the body diameter may vary according to specification.

Suitable for handrails larger than 40mm diameter. Raillight 2D is profiled to suit the handrails radius.



Acrospire
Products Ltd

Installation Jigs & Tooling

Drill & Tap Jig for retro-fitting 16mm Raillight ECO for metal.
Designed for reliable, dependable operation. Just clamp in position, drill and tap.
Jig comprises:
Independent clamps for jig and bush retention.
3 Drill plates c/w with bushes to accept 5 / 10 /15mm drill bits & 1 x Tapping plate supplied c/w M16 x 1 Dormer tap.
Lightweight Aluminium body, Steel mechanics, Soft jaws for surface protection.
Digital Inclinometer

In the event of damage all parts are replaceable.

Available to purchase or rent.

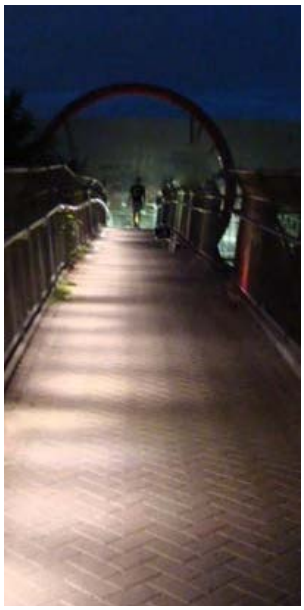
INSERTion Tool
Driver for installing 16mm Raillight ECO. Lightweight Aluminium body, easily replaceable parts

Acrospire Products Ltd

The benefits of handrail lighting

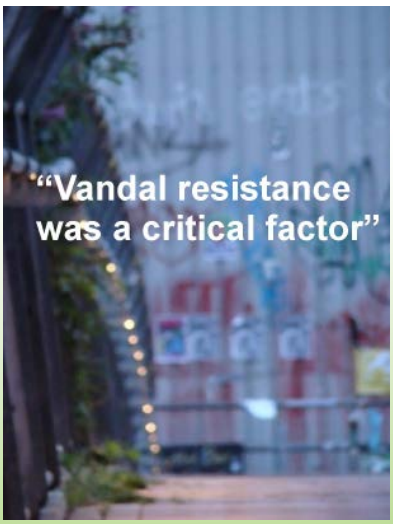
Visual acuity

We only perceive objects by the light reflected from them.
Our eyes accommodate for glare from overhead lighting but this reduces our perception of contrast and greatly effects our visual acuity.



Light pollution

Light pollution is the excessive and inappropriate use of artificial light. The four components of light pollution are often combined:
Urban Sky Glow—the brightening of the night sky over inhabited areas.
Light Trespass—light falling where it is not intended, wanted, or needed.
Glare—excessive brightness which causes visual discomfort. High levels of glare can decrease visibility.
Clutter—bright, confusing, and excessive groupings of light sources, commonly found in over-lit urban areas. The proliferation of clutter contributes to urban sky glow, trespass, and glare.
It has been proven that light pollution has a detrimental effect on nocturnal wildlife.
At night it makes sense to only illuminate the surface where you are treading, highlighting any obstacles and surface deviations, with little or no glare from the light source,
Our handrail products efficiently deliver just the right amount of light directly onto the surface, meaning lower intensity, dramatically reduced light scatter and no direct, upward illuminance to effect wildlife.



Vandal resistance

Our handrail products are not only beautifully finished but they are also very rugged, designed to withstand high impact loads. Resistant to >IK10

Emergency

Their low mounting height make illuminated handrails ideal for emergency lighting.
We provide autonomous, remote sited emergency packs that power will continue to power the handrail for up to 3 hours.

Cabling convenience

A tubular handrail provides a perfect conduit for cables, allowing lighting to be installed over great distances without the need for surface conduit or ground excavations

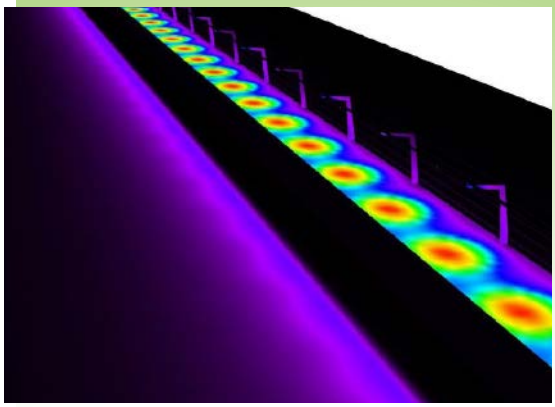
Interiors

Raillight projectors are perfectly suited for interior use with stunning effects. Accentuating staircases, steps or providing low level corridor lighting for the disabled.

Photometric design service

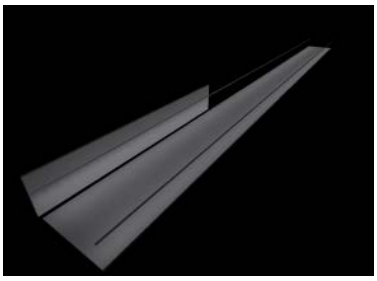
Computer simulation of your installation to ensure lighting /energy performance and compliance with any relevant statutory codes

As part of our full technical support service we provide computer generated simulation of your project and it's expected performance. Results are formatted in views and intensity diagrams.

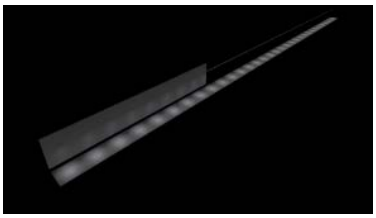


Below are a selection of views illustrating different parameters.
A vertical surface has been added to show light patterns visible on that plane.

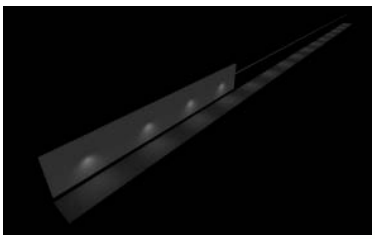
This example is of a current installation: TFL Bankside Pier London
The performance standards for this type of heavy pedestrian walkway is an average illuminance of 50 lux with a minimum / average ratio of 0.4 (Emin/Em)
Brow dimensions: 37.5 x 2.8 metres. Two parallel handrails.
Product installed: Raillight ECO 1watt 94 degree lens. Installed at 40 degrees elevation,0.375m spacings. Total number installed : 200.
Average illuminance: 76 lux Uniformity Emin/Em: 0.45.
Total power 240watts - 6.4watts/metre



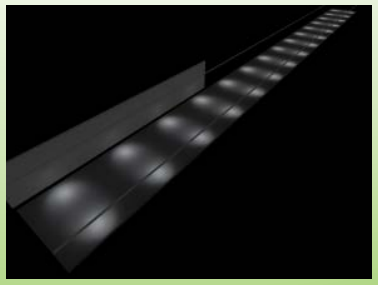
Looking at a different scenario where the walkway is only 1 metre wide:
Dimensions: 37.5 x 1 metre. One handrail.
Product: Raillight ECO / Asymmetric 1watt 36 degree lens. Installed with 25 degree elevation, 1.2m spacings. Total number of downlights: 32.
Average illuminance: 74 lux Uniformity Emin/ Em 0.42
Total power 53watts - 1.4watts/metre



Let's assume the previous walkway is in a wildlife sanctuary where standard uniformity is required but the levels need to be very low; to achieve both we will have to a add dimming control to reduce the power by 50%:
Dimensions: 37.5 x 1 metre. One handrail.
Product: Raillight ECO 1watt 94 degree lens. Installed with 15 degree projection, 1.5m spacings. Total number of downlights: 30.
Average illuminance: 7 lux Uniformity Emin/Em: 0.43
Total power 25watts - 0.7watts/metre



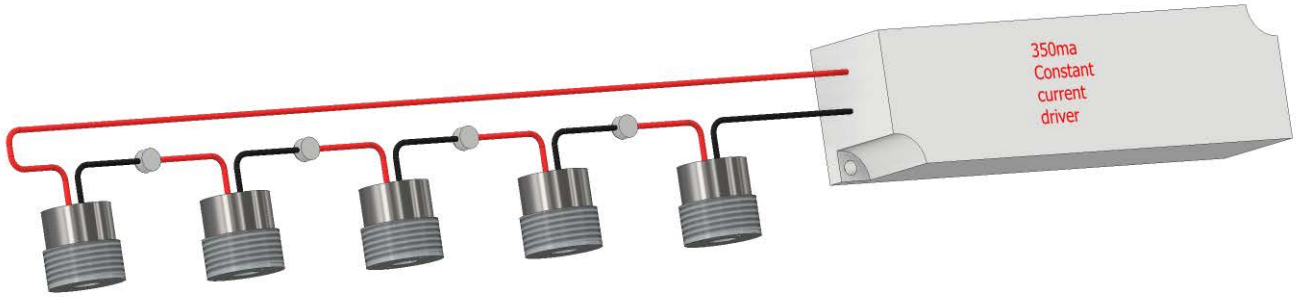
Lets make a statement at the entrance to a restaurant or house; across a bridge or along a pathway:
Dimensions: 37.5 x 2.8 metres. Two parallel handrails.
Product: Raillight ECO / Asymmetric 1watt 36 degree lens. Installed with 35 degree elevation, 2m spacings. Total number of downlights: 30.
Average illuminance: 23 lux, maximum 136lux Emin/ Em 0.02
Total 50power watts - 1.7watts/metre



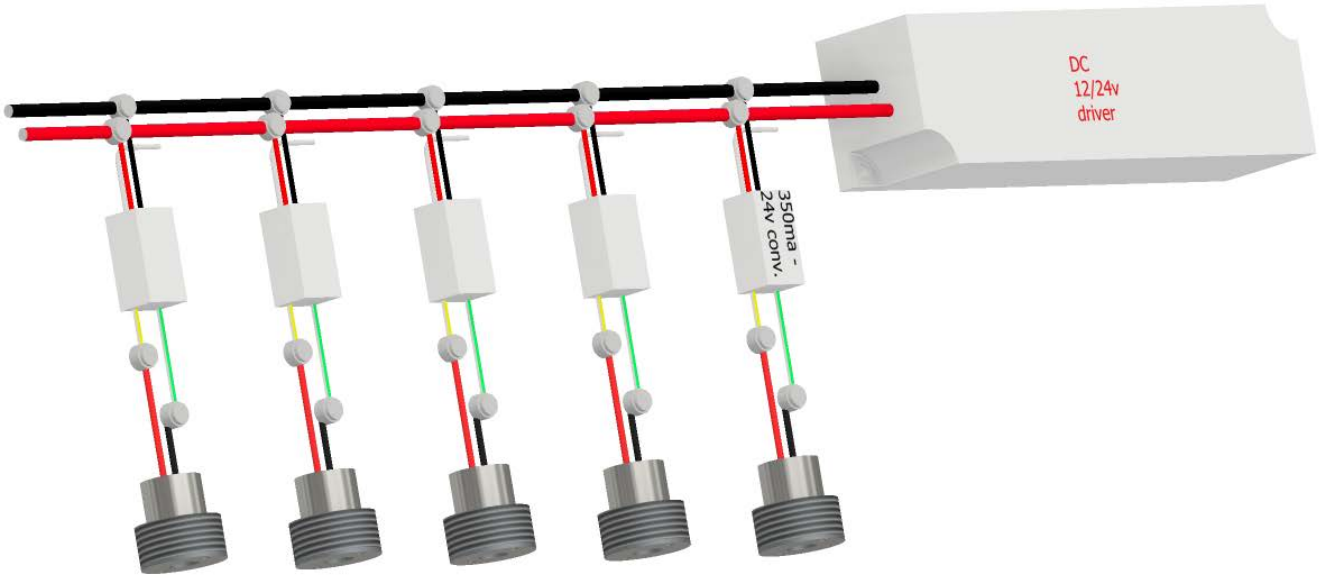
Acrospire
Products Ltd

Making the right connection

Our Handrail Lighting products may be connected as CONSTANT CURRENT or CONSTANT VOLTAGE Circuits



CONSTANT CURRENT CIRCUIT
The easiest circuit, simply connect handrail lighting as above. The current remains at 350ma / 500ma but the voltage increases by 3V per light connected, this means on long handrail lengths the potential voltage can be very high.
Example: 30M handrail / 0.5M spacings
Voltage = 180Volts
Please note: To comply with SELV regulations the maximum voltage permissible is 120v D.C..



CONSTANT VOLTAGE CIRCUIT
A more expensive option with more connections but the voltage remains a constant 24V.
Recommended for commercial installations especially with emergency lighting requirements
In the event of a single lamp failure the constant voltage circuit is less likely to cause all of the lamps to be extinguished

INSTALLATION REQUIREMENTS VARY.
We are here to help, please contact us to discuss individual projects.

Acrospire Products Ltd

Product comparison guide



PRODUCT Specification	Raillight ECO	Raillight Asymmetric	Raillight2D Asymmetric
POWER: CONSTANT CURRENT 350ma - 1 watt operation (average life 100,000 hours) 500ma - 1.5watt operation (average life 50,000 hours)	 ✓ ✓	 ✓ ✓	 ✓ ✓
DEFAULT LENS (degrees) Range of lens options	70 14 - 94	40 14- 40	16 14-40
PROJECTION	Direct	Asymmetric	2D Asymmetric
24v D.C. Operation option 350ma 1.4watt 500ma 2.0watt	 ✓ ✓	 ✓ ✓	 ✓ ✓
DEFAULT BODY MATERIAL 316 Stainless Steel Custom material options: Aluminium, Brass, Mild Steel, Bronze, Copper	✓ ✓	✓ ✓	✓ ✓
Mechanical Fixing	M16 x 1 Screw - in	2x M4 Machine Screws	Push fit with tool
Choice of tamper-proof fixings	N/A	✓	✓
INGRESS Protection IP67 momentarily immersible to 1 metre	✓	✓	✓
Impact resistance >IK10	✓	✓	✓
Wire PTFE 700mm Black & Red	✓	✓	✓

Installation Examples

Target surface: 1 metre & 2metre wide
Twin Handrail, 350ma operation

Applicable sites	Code specification	1m wide product / spacing	2m wide product / spacing lens /azimuth
Railways Stairs: small- medium sized stations Access Tunnels Canals: Dangerous walkways	Average intensity : 50 lux Uniformity: 0.4	Raillight ECO / Asym-metric: 1500mm spacing 70 degree lens 25 degrees rotation Raillight2D 1800mm spacing 40degree lens 50 / 20 degrees rotation **<2 watts / metre**	Raillight ECO / Asym-metric 1100mm spacing 46 degree lens 35 degrees rotation Raillight2D 1400mm spacing 40degree lens 62 / 50 degrees rotation **<3 watts / metre**
Railways: Walkways General Area Inside Buildings: Unmanned gangways	Average intensity : 20 lux Uniformity: 0.4	Raillight ECO / Asym-metric: 2250mm spacing 90 degree lens 15degrees rotation Raillight 2D 2600mm spacing 36degree lens 62 / 7degrees rotation **<1.5 watts / metre**	Raillight ECO / Asym-metric: 1800mm spacing 70 degree lens 25 degrees rotation Raillight 2D 2200mm spacing 36degree lens 62 / 7degrees rotation **<2 watts / metre**

Target surface: 0.75 metre wide
Single Handrail, 500ma operation

Tunnel Emergency Lighting Walkway 750mm wide LED operating at 500ma	3lux	Raillight ECO / Asymmetric: 2800mm spacing 90 degree lens 5degrees rotation Raillight 2D 4000mm spacing. 16degree lens 62 / 6degrees rotation **<1watt / metre**
	1 lux	Raillight ECO / Asymmetric 3700mm spacing. 90 degree lens 5degrees rotation Raillight 2D 5000mm spacing. 16degree lens 62 / 8 degrees rotation **<1 watt / metre**

These examples are for guidance only
Please contact us with your project for precise calculation
Parameters:
Handrail mounting height: 900mm
Maintenance factor: 0.8

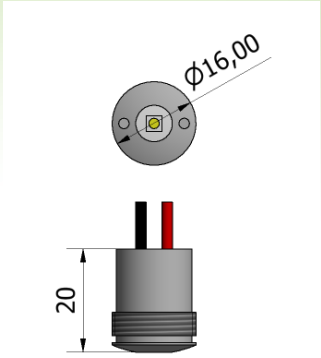
Acrospire
Products Ltd

Product specifications:

All of these products use our PRO S projection system so the following specification is common to all.

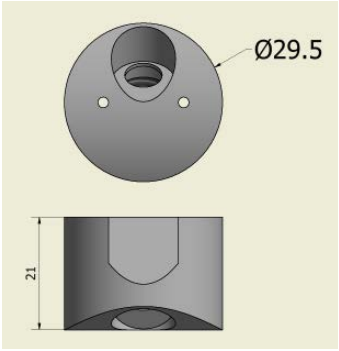
Osram SSL LED Chip:
1 watt 350ma operation (1.5w Constant voltage operation)
LED power consumption 1 watt
Operating current 350ma (typ. fV 2.85)
Lumen output: 110 lumens
Anticipated life: 100,000 hours

1.5 watt 500ma operation (2w Constant voltage operation)
LED power consumption 1.5 watt
Operating current 500ma (typ. fV 3.0v)
Lumen output: 140 lumens
Anticipated life: 50,000 hours



Raillight ECO

Stock colour temperatures (CRI 80):
3000K warm white
4000K cool white
Options:
CRI 80: 2500K / 2700K / 3500K/ 4500K/ 5000K
CRI 90: 2700K - 4000K
CRI 70: 3000K - 6500K + Streetwhite: 5700K-7500K
Monochrome: Red / Green / Blue / Yellow/ Amber

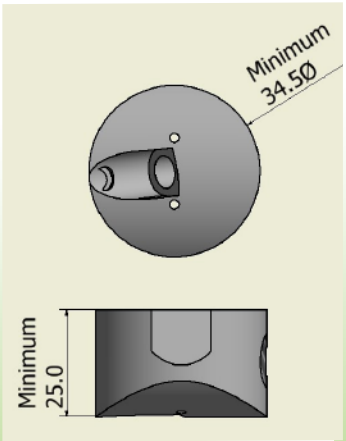


Raillight Asymmetric

Stock lenses, beam angle:
40 degrees
70 degrees:
Lens options; part#
14º 801105514
16º 801104716
23º 801100123
36º 801108236
40º 801100340
46º 1501100346
55º 801302655
70º 801195770
94º 1501195794

Body material; 316 Stainless Steel
Alternative options: Aluminium/ Mild Steel/ Brass/ Copper/ Bronze
Environmental
Ingress Protection: Water resistant to IP67, temporary submersion to 1 metre.
Impact resistance: Vandal resistant >IK10

Supplied with 250mm /1.2mm black & red PTFE sleeved wire



Raillight 2D
Asymmetric

LED Drivers

To ensure optimum performance we supply or advise on the correct drivers required for each project.

Custom Designs

We are always keen to discuss new solutions, please contact us with your requirements.

Acrospire
Products Ltd

telephone: +44 (0)1256 308467
email: info@acrospireproducts.com
web:www.acrospireproducts.com

Unit D, Loddon Business Centre
Roentgen Road, Basingstoke
Hampshire
RG24 8NG
United Kingdom